A STUDY ON THE LANDSCAPE OF WORK INTEGRATED LEARNING (WIL) TO IMPROVE GRADUATE WORK-READINESS

by

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Dedication

It is the profound understanding of "Aham Brahmasmi" – ‘the divine essence within me’ that instilled the unwavering belief in my own potential & the courage to celebrate the beautiful me, I offer my deepest gratitude! This faith illuminated my path to find the strength to complete not one, but three full-time master's degrees amidst adversities in diverse fields: MSW, MPhil, and MSc. Simultaneously, rising high in my passion for arts especially Latin dance forms, pursuing my career being a single mother & the sole caretaker of 3 precious daughters.

In the journey of life, amidst the challenges and triumphs, I stand here today with a heart overflowing with gratitude and a spirit filled with resilience. As I submit this thesis, the culmination of years of dedication and perseverance, I am humbled by the journey that has led me to this moment. Twice before, I embarked on the journey of a PhD, only to pause in the noble pursuit of motherhood, prioritizing the emotional & financial well-being of my daughters above all else.

It is with deep reverence and humility that I dedicate this achievement, to every single mother and girl child who bravely navigate the challenges of life with grace and fortitude. To those who face the harsh realities of discrimination, harassment, and societal constraints, this thesis stands as a beacon of hope and inspiration. May my journey serve as a reminder that with unwavering focus, relentless determination, and unwavering belief in one's own capabilities, anything is possible.

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My precious daughters Zesh, Annika, and Kiarra, for emblazoning my path with your unwavering belief in me, your remarkable emotional composure & achievements amidst chaos served as the greatest source of my inspiration & strength. Your resilience mirrored my own, fuelling my pursuit amidst the challenges of single parenthood, my magical ones!

While bonds of blood may falter, I thank my chosen family who emerged as pillars of support, Dr. Jacob Thomas IPS, whose mentorship was nothing short of divine intervention, Fr. Jose Manjayil, my friends Inu, Ann, & Anand for enriching my life.

My acknowledgment extends beyond this document. As I disseminate my knowledge & skills to the world, my deepest gratitude to our dearest Prime Minister, Narendra Modi ji for creating a secure environment in my ‘Maha-Bharatham’ enabling me to make this purposeful progress. Your exemplary leadership & transformative governance enkindled me to derive a leadership framework “SoS”, laying the foundation of my prowess as a Social Scientist & Impact Strategist.

As I reflect on the journey filled, the milestones achieved, it fills me with a sense of profound gratitude and humility. This thesis is a testament to the power of hope, perseverance, and the indomitable human spirit. Upholding the philosophy of “Vasudhaiva Kutumbakam”, I am committed to fostering where one earth, one family & one future becomes our collective reality.

ABSTRACT

A STUDY ON THE LANDSCAPE OF WORK INTEGRATED LEARNING (WIL)

TO IMPROVE GRADUATE WORK-READINESS

Background

This dissertation provides an overview of a comprehensive study on Work Integrated Learning (WIL) in Indian higher education, particularly focusing on IT sector's demand for skilled graduates. The study offers unique insights into the landscape of WIL, its theoretical underpinnings. It highlights the urgency of enhancing graduate work-readiness in India. It also highlights that collaborative efforts are needed between industries and universities and in order to bridge the gap between theoretical education and practical workplace requirements.

Methods

The study is characterised as Quantitative, Descriptive, Cross-sectional, Non-experimental, Analytical, Field Research" approach. This design is carefully tailored to investigate the existing landscape of Work Integrated Learning (WIL) concerning university-industry collaboration in AICTE-approved institutes offering undergraduate courses in Engineering/Technology in Bangalore, India.

Results

The findings and implications of the study, highlights the effectiveness of WIL in improving graduate work-readiness and the importance of university-industry

collaboration. It proposes a phased UIG-WIL model for preparing students for the workforce but also identifies challenges such as lack of causality and representativeness. While the study underscores the promising potential of WIL in addressing employability challenges in India, it also emphasizes the need for ongoing research, innovation, and collaboration to realize this potential fully. By embracing the recommendations outlined in the study, India can foster a culture of innovation, collaboration, and continuous improvement, to ensure graduates are well-equipped to flourish in the dynamically changing global workforce.

KEYWORDS

Work Integrated Learning, University Industry Collaboration, Work readiness of Graduates, Existing Landscape of WIL, Graduate Employability, Staff perception, Student's Perception, Model of WIL

LIST OF ABBREVIATIONS

IT - Information Technology

WIL -Work Integrated Learning

NEP - National Education Policy

AICTE - All India Council For Technical Education

UG - Under Graduate

U-I -University -Industry

UIG - University -Industry-Government

UIG - WIL - University -Industry Government - Work Integrated Learning

STEM - Science Technology Engineering Mathematics

RBV - Resource Based View

CSV - Comma Separated Values

R&D - Research & Development

HEI - Higher Education Institution

UBI - University Business Incubators

PSA - Problem Solving Ability

NASSCOM - National Association Of Software & Service Companies

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1: INTRODUCTION

1.1 Overview

Demand for Graduate Workforce in Indian IT industry

India is among the world's rapidly expanding economies. In 2020, the Indian IT sector contributed 8% to the nation's GDP, one of the major contributors to its economic growth. The IT industry added 4.5 lakh new jobs in 2021. There is a rapid advancement in the IT industry which requires a larger number of skilled IT professionals in various domains, though there is a lack of experienced professionals to meet the demand. The Indian IT sector is projected to account for 10% of the country's GDP and that the business services market in India will reach US $19.93 billion. Following the huge demand for skilled workforce in Artificial Intelligence, Data analytics, and DevOps, companies such as Tata Consultancy Services (TCS), Wipro, Infosys, and HCLTech, notified about hiring 1.6 lakh freshers into the workforce in the year 2021 (IBEF, 2021). This indicates that the existing experienced IT workforce is insufficient for the growth of India's IT sector which significantly contributes to the nation's GDP. While there has been this rising demand for a skilled workforce, companies have been facing attrition, especially in mid-senior roles as the experienced workforce seems to be switching jobs for better work environments and better pay, leading to a shortage of skilled IT workforce (Hariharan, 2022). Also the technology landscape experienced major changes following the global pandemic & with the ‘Great Resignation’ employers are faced with the threat of constantly retaining the skilled workforce. India is placed third globally with respect to the emerging start-up

ecosystem. & this is also leading to an increase in demand for skilled IT workforce in the various IT domains (Kumar, 2022). Also, hiring experienced candidates costs employers too much with the rising attrition rate (Moorthy, 2022). The IT sector in India leads the job market for recent graduates, providing 31% of entry-level positions. HCL announced an increase in the salary package of freshers to 4.5 lakhs per annum (ET Now, 2022). It is expected to recruit 360,000 freshers (Chadha, 2022) by 2025. A Report by NASSCOM highlights that more than 225 tech start-ups were founded in 2021, 42 unicorns being added with start-ups receiving a funding of $ 24.1 billion out of which 48% are tech start-ups. Thus the start-up ecosystem is also more inclusive with hiring freshers (Insights, 2022). All these factors indicate a huge demand for Graduate workforce in the Indian IT industry. The core motivation for this study lies in recognizing that the dearth of industry-ready skills is a significant contributor to graduate unemployability, a pressing issue acknowledged in numerous studies.

1.2 Research Problem

Importance of Work-Readiness of Graduates in India

India contributes to 31.7% of the world's STEM graduates and thus graduates represent the major workforce propelling India towards economic growth. According to the census, 250 million graduates are ready to join the workforce in the following decades (Govt. of India, 2022). India is also one of the youngest countries globally, with a significant proportion of its population in the college-going age group. However despite all the opportunities for graduates in the Indian IT industry & the young population, the unemployability of youth in India has been a serious concern (Anand, 2022). A job

assessment platform highlights that more than 80% of engineers in India lack the qualifications needed for positions in the knowledge economy and lag behind their global peers in essential digital skills and technologies like machine learning, artificial intelligence, and data science. (ET Spotlight, 2022). The Education Commission, Global Business Coalition for Education (GBC-Education), and UNICEF warn that without proper intervention, more than half of Indian youth might not possess the necessary education or skills for employment by 2030. Only 46.21% of the total Indian graduates were employable in 2022 (Borgohain, 2022). Studies have shown the graduates not being work-ready or not possessing relevant skills is the major reason for this unemployability. Hence work-readiness through Skill Development among young graduates has become the major focus in the recent reforms initiated by the government. Especially following the implementation of the National Education Policy (NEP) 2020, NEP seeks to address the discrepancy between existing learning outcomes and future needs by introducing significant reforms to enhance quality, equity, and integrity in the education system. This initiative involves collaboration with organizations such as the Confederation of Indian Industry (CII), Association of Indian Universities (AIU), United Nations Development Program (UNDP), All India Council for Technical Education (AICTE), Additional Skill Acquisition Programme (ASAP), among others. along with the Government of India are striving to make the youth employable with required skills needed for the industry (India Skills Report, 2023).

Intervention Through Work Integrated Learning (WIL)

We can see that as the demand for the graduate workforce is on the rise there is also a need for work readiness of graduates. While data from a NASSCOM report, only 25% of engineering graduates entering the IT workforce are considered employable. Another research highlights that only 3.84% of graduates are considered adequately prepared for start-up positions, while 6.56% are deemed ready for roles in design. This underscores the urgent necessity to improve the employability of engineering graduates by introducing innovative approaches like experiential learning programs (Nair, 2020). The deficiency in industry-ready skills has been pinpointed as a significant factor contributing to the lack of readiness for employment among graduates in India, necessitating intervention. Nair (2020) talks about a case study that revolves around the practical implementation of experiential learning strategies known as "Live-in-Labs" thoughtfully woven into the fabric of the university's academic landscape which is learner-centric. This experiential program immerses students in real-world challenges encouraging them to apply their engineering knowledge, principles, and skills outside the traditional classroom setting (Nair, 2020). Thus studies have shown that Work Integrated Learning (WIL) through university-industry collaboration could be the most effective solution for the problem. It is also highlighted by studies that the work-readiness of graduates can be improved with by implementing WIL models in educational institutions, which will provide the graduates with the hands-on experience of the work environment during their graduation. The literature by Konstantinou and Miller (2021) suggests that experiential learning that are made into curriculums of work-based modules can result in a significant positive effect in bridging the gaps between the workplace and the classroom. Another study provides a detailed

overview of the diverse WIL practices such as teaching and learning, importance of engagement with stakeholders, maximizing learning outcomes through WIL with support and infrastructure to develop WIL. It points out that expansion of WIL across multiple industries is expected to progress going further (Zegwaard et al., 2021). A recent study on enhancing skills in higher education for the post-pandemic workforce underscores that educational institutions are primarily concentrating on preparing the students for traditional workplace pre-pandemic & negligible efforts are being made to transform the educational system to suit the post pandemic dynamic requirements by various industries. It highlights the need for educational providers to develop an environment of work based learning, moving away from the theoretical bubble of a closed curriculum and also pin points the scope of examination of the current environment in the educational institutions which integrates real work requirements with the curriculum in order to improve the WIL practices (Bayerlein et al., 2022).

Importance of WIL with respect University-Industry Collaboration

While the traditional emphasis has been on work placements, recent years have seen a concerted effort to diversify work-integrated learning (WIL) offerings, particularly through the development of innovative models. This change has been driven partly by the increasing pressure on universities to demonstrate greater flexibility and responsiveness to meet the changing needs of both industry and students (Zegwaard & Rowe, 2019). This shift has been motivated in part by mounting pressure on universities to display enhanced flexibility and responsiveness in addressing the evolving needs of both industry and students (AICTE, 2018). In this context, college education, especially at the undergraduate

level is a pivotal phase in students' lives. It provides a distinctive chance to furnish them not just with theoretical knowledge but also with practical skills, preparing them effectively for their chosen industries. Undergraduate (UG) courses often span several years. This extended duration allows for in-depth learning and exposure to various aspects of the subject matter. UG courses provide students with a strong foundation of knowledge in their chosen field. This foundation is invaluable and forms the basis for more advanced learning and practical application. It encourages holistic development, including soft skills, critical thinking, and communication abilities, which are equally important in the IT sector. Therefore, collaborations between universities and industries are crucial in maximizing the benefits of this time investment, ensuring that graduates are thoroughly prepared to make meaningful contributions to the workforce. Collaborations between universities and industries are vital to maximizing the value of this time investment. Such collaborations can take various forms, including programs, projects, and internships. Understanding the current landscape of industry-university collaboration is of paramount importance for several compelling reasons, and this understanding serves as the foundation for suggesting an effective model for future collaboration.

1.3 Purpose of Research

Research pivots on recent approval of WIL by AICTE, a strategy that amalgamates learning with substantial work experience, and seeks to evaluate its prevalence and effectiveness within university settings. This research is distinct in its focus on taking action to understand the current scenario and proposing measures for implementation by

relevant authorities. This study aims to investigate the interaction between universities and industries, focusing particularly on the educational framework and gathering insights from university staff and students. This inclusive approach aims to provide insights into how key stakeholders perceive the current state of WIL, as their experiences and perspectives are integral to crafting an effective model for collaboration. This research not only aims to understand the current scenario but also endeavours to contribute actionable recommendations for enhancing the existing collaborative framework, making it more efficient, and bridging the skills gap that hampers graduate employability with a special emphasis on the high-demand and dynamic IT sector. In summary, it is a purpose-driven attempt aimed at translating insights into impactful strategies and solutions that benefit graduates, education sector, and industry at large.

1.4 Significance of the Study

Understanding the Current Landscape of University-Industry Collaboration

This understanding serves as the foundation for suggesting an effective model for future collaboration. By comprehending the current state of industry-university collaboration, stakeholders can pinpoint gaps, deficiencies, and untapped opportunities & what needs improvement. Efficient collaboration models can be customized to suit the particular needs, strengths, and limitations of the industries and universities involved, ensuring relevance and practicality. Knowing the current landscape helps in allocating resources such as financial/human/infrastructural resources efficiently. Identifying obstacles is the first step in devising strategies to overcome them. The current landscape

can reveal existing barriers which may include regulatory hurdles, communication challenges, or institutional constraints etc. Understanding the current landscape is essential for engaging these stakeholders such as academia/industry partners/government bodies/students etc. addressing their concerns and aligning their interests with collaborative efforts. To assess the effectiveness of any new model, it's crucial to have a benchmark against which progress can be measured. Successful collaboration models can serve as blueprints for the future. The present situation provides a starting point from which progress can be measured and quantified over time. Understanding the current state ensures that suggested model aligns with the goals effectively such as diverse objectives, from workforce development to research advancement and technology transfer. In essence, comprehending the current landscape of industry-university collaboration serves as a critical starting point for informed decision-making. Without this understanding, any model proposed would be built on assumptions rather than empirical insights. It allows for a strategic, evidence-based approach that maximizes the chances of success and addresses the specific needs of the collaboration partners.

Improving the Work-Readiness Of Graduates in The Indian IT Hub

In India, the IT sector holds the majority share of entry-level jobs for fresh graduates, accounting for 31% of these positions. It is projected to hire 360,000 fresh graduates by 2025 (Chadha, 2022). Indian graduates constitute a significant portion of the global STEM workforce, contributing 31.7% of STEM graduates worldwide. This research aims to explore the current status of Work Integrated Learning (WIL) within AICTE-

approved universities in Bangalore, the capital of Karnataka, known as India's IT hub and often referred to as the Silicon Valley of India due to its vibrant IT ecosystem. The study will examine the dynamics and impact of university-industry collaborations, offering insights and recommendations for stakeholders in education, industry, and government to address the issue of graduate employability effectively. AICTE serves as the national-level council under the Ministry of Human Resource Development, overseeing the approval of technical and management courses across universities and colleges in India. In Bangalore, where numerous multinational IT giants like Infosys, Wipro, Google, Apple, and others are headquartered, and with over 5500 IT companies in Karnataka, there is a substantial demand for skilled workforce. The study intends to highlight how collaborations between universities and industries equip graduates with the necessary skills, knowledge, and practical experience needed for meaningful employment in this competitive environment. Graduates who have been part of collaborative programs are often more work-ready according to a paper by Tezcan et al. (2020) points out how a WIL model incorporated into fundamental design studio courses within a four-year architectural program effectively imparted the professional competencies that the industry required and enhanced students' ability to confront real-world challenges. The experience working on projects, solving industry-specific problems, and understanding the corporate environment. by aligning the curriculum with industry needs, can aid in making graduates job-ready. Collaborations also foster research that addresses real industry challenges. This research can lead to innovations and solutions that benefit the sector as a whole. The significance of studying the landscape of WIL in universities in Bangalore will increase the scope of improving the

work-readiness of graduates through industry-university collaborations, in turn improving the graduate hiring in the IT hub of Bangalore.

1.5 Research Objectives and Questions

Purpose of the study

Students typically spend a substantial amount of time, usually 3-4 years, in universities during their undergraduate courses, providing an opportune timeframe to successfully integrate Work Integrated Learning (WIL). University-industry collaboration in the context of WIL must prepare students for the evolving and emerging careers. This will be pivotal in shaping the learning experience throughout the undergraduate degree program. In the Indian context, industry & academia linkages are crucial in creating employable graduates and a survey by AICTE in 2018 reveals that 78% of the educational institutes having some linkages with industry to set up cells or funding in some form. It also points out that better linkages beyond funding must be focus of the collaborations which can enhance the curriculum into a work based curriculum (Tilak and Choudhury, 2021).

Technology positions demand a diverse skill set encompassing problem-solving, data analysis, and technical proficiency. An increasing number of Indian universities are integrating Work Integrated Learning (WIL) into their academic frameworks. This study aims to investigate the current status of WIL within AICTE-approved universities in Bangalore. This will help in understanding the extent of industry-university collaboration in these universities, the challenges faced by universities in implementing WIL programs,

benefits of WIL for graduate hiring, and the implications on universities, students & employers.

Defining Work Integrate Learning (WI)

As per the extensive literature review, Work integrated learning (WIL), is the solution suggested for making the graduates work-ready & thus employable. Work Integrated Learning (WIL) refers to an experiential education approach where students have the chance to acquire practical work experience while continuing their studies at a university. It is a model of learning that bridges the gap between traditional academic learning with practical experience, providing students with a more holistic learning experience to be successful in the workplace. Employers often collaborate with educational institutions to offer Work Integrated Learning (WIL) programs, aiming to equip students with the necessary workplace skills.

Defining the University-industry collaboration

University-industry collaboration within the context of Work Integrated Learning (WIL) involves a strategic partnership between academic institutions, such as universities and colleges, and industrial or corporate organizations. This collaboration is aimed at creating synergies between the academic curriculum and the practical demands of the industry. In the realm of Work Integrated Learning (WIL), university-industry collaboration entails combining academic education with practical, real-world work experiences. It extends beyond conventional classroom education, offering students the chance to acquire practical skills, apply theoretical knowledge, and participate in meaningful industry work. These programs may encompass internships, co-op programs,

apprenticeships, and more. Such collaborative efforts are generally aimed at improving students' employment readiness by equipping them with the skills, competencies, and experiences needed to succeed in their chosen professions.

Defining the 'Landscape of WIL'

WIL allows students to apply their academic knowledge in practical settings, which helps develop their skills, improve their employability, and gain real-world experience. Additionally, it enables students to build professional networks, which can be advantageous when seeking employment, as employers often value practical experience and professional connections.

This study aims to examine the comprehensive landscape of Work Integrated Learning (WIL) within the context of university-industry collaboration. It may include setting up infrastructure, industry experts taking classes for the students to train them with respect to industry requirements, organising regular workshops for students to get hands-on experience in the relevant domains, running live projects involving students & regular assessment of the progress of students to validate the learning process. A systematic process will be established so that by the end of the their undergraduate course they are equipped with skills relevant to the job market and the graduates are hired by corporates without a need for further training. Their learning should address the market needs and industry requirements along with multiple career options suiting the skills of the students. Universities may encounter several challenges when implementing WIL programs. For instance, they often lack the resources or infrastructure to adequately support and guide students during their WIL experiences. Additionally, some students might struggle to

balance their academic responsibilities with the demands of their WIL placements, as the workplace environment can differ significantly from a traditional academic setting. Therefore, it is essential for universities and employers to collaborate closely to provide students with the best possible opportunities for post-graduation employment.

Investigating the existing landscape of university-industry collaboration in relation to work-integrated learning involves researching and comprehending the current state of partnerships and collaborations between universities and industries within the context of work-integrated learning programs. It would involve understanding the following aspects of the collaboration: The extent of collaboration: This involves identifying the number of universities and industry partners currently participating in work-integrated learning programs, as well as examining the types of programs and initiatives being implemented, along with the duration and frequency of these collaborations. The nature of collaboration: involves determining whether it is based on a formal agreement or an informal understanding, outlining the goals and objectives, defining the roles and responsibilities of each partner, and identifying the strategies and mechanisms employed to facilitate collaboration. The outcomes of the collaboration include evaluating its impact on students, industry partners, and the overall educational system. This assessment may cover student outcomes like employability and career readiness, as well as benefits for industry partners, such as access to talent and knowledge. The barriers and facilitators: This includes identifying the factors that enable or hinder collaboration, such as cultural differences, organizational structures, and funding. This can include the resources available to the partnership, such as funding, staff, equipment, and infrastructure.

Overall Objective

The present study aims to investigate the current status of Work Integrated Learning (WIL) in AICTE-approved institutes in Bangalore that offer undergraduate courses in Engineering & Technology. The goal is to formulate a WIL model aimed at enhancing graduates' readiness for work, thereby improving their employability.

Research Objectives

1. To study the existing landscape of WIL with respect to university-industry collaboration in institutions approved by the All India Council for Technical Education (AICTE) offering undergraduate courses in Engineering & Technology in Bangalore from the university staff's perspective.

2. To study the existing landscape of WIL with respect to university-industry collaboration in institutions approved by the All India Council for Technical Education (AICTE) institutes offering undergraduate courses in Engineering & Technology in Bangalore from the university student's perspective.

3. To suggest a model for WIL for universities to adopt for improving university-industry collaboration and the work-readiness of graduates.

Objective 1: To study the existing landscape WIL with respect to university-industry collaboration in AICTE approved institutes offering undergraduate courses in Engineering & Technology in Bangalore from the university staff's perspective.

Research Questions based on Objective 1

1. What is the current level of familiarity of WIL programs in AICTE-approved institutes from the university staff's perspective?

2. How do university staff perceive the benefits and challenges of university-industry collaboration for WIL programs in these institutes?

3. What factors influence the university staff's involvement in the design and implementation of WIL programs in these institutes?

4. What measures are in place to ensure the quality and effectiveness of the WIL programs in these institutes from the university staff's perspective?

5. What is the extent of collaboration?

6. What is the nature of collaboration?

7. What are the outcomes of collaboration?

8. What are the barriers and facilitators?

Objective 2: To study the existing landscape of WIL with respect to university-industry collaboration in AICTE approved institutes offering undergraduate courses in Engineering & Technology in Bangalore from the university student’s perspective.

Research Questions based on Objective 2

1. What is the students' awareness and understanding of WIL programs in AICTE-approved institutes?

2. How do students perceive the benefits and challenges of participating in WIL programs in these institutes?

3. What factors influence the students' participation in WIL programs in these institutes?

4. What are the students' expectations and experiences of WIL programs in these institutes, and how do these impact their academic and career development?

Objective 3: To suggest a model for WIL for universities to adopt for improving university-industry collaboration and the work-readiness of graduates.

Research Questions based on Objective 3

1. What are the current models of WIL being used by universities in AICTE-approved institutes offering undergraduate courses in Engineering & Technology in Bangalore?

2. What are the challenges and limitations of the current models of WIL in improving university-industry collaboration and work-readiness of graduates?

3. How do universities perceive the importance of WIL in improving university-industry collaboration and work-readiness of graduates?

4. What are the factors that influence the success of WIL programs in improving university-industry collaboration and work-readiness of graduates?

5. How does university-industry collaboration impact the work-readiness of graduates from AICTE-approved institutes?

6. What are the best practices for university-industry collaboration in WIL programs that have been successful in improving work-readiness of graduates?

7. How can universities better support students in the transition from WIL programs to the workforce?

8. What role can the government, industry, and universities play in improving WIL programs and university-industry collaboration in AICTE-approved institutes?

9. How can universities measure the effectiveness and impact of WIL programs in improving university-industry collaboration and work-readiness of graduates?

10. What is the model outline for WIL to improve WIL in AICTE approved institutes

2: REVIEW OF LITERATURE

2.1 Theoretical Framework

It’s is important to present the theoretical framework for in the context of this research on order to get an organized structure explaining the complex dynamics, defining key terms, concepts, and relationships, which aids in conceptual clarity. Theoretical framework serves as the intellectual backbone this research. A theoretical framework also provides a basis for comparisons of different models, programs, or contexts and drawing meaningful conclusions about the relative effectiveness of various approaches. This research typically involves multiple disciplines, including education, business, and industry-specific fields. A theoretical framework can help bridge these disciplines by providing a common language and theoretical basis for cross-disciplinary research. This study incorporates Human Capital Theory, Resource-Based View (RBV) Theory, Stakeholder Theory, and Learning Organization Theory to achieve a thorough understanding of how human capital is developed, resources are utilized, stakeholders' interests are managed, and learning organizations are cultivated within the framework of Work-Integrated Learning. With the intend that this multifaceted approach will enrich the research and contribute to more effective WIL program design and implementation.

2.2 Theory of Human Capital

Human Capital Theory, a cornerstone of economic theory, offers insights into how investments in education and training, such as WIL programs, contribute to the accumulation of human capital, thereby influencing graduates' employability. A study by

Donald et al. (2019) Examine how human capital, which includes factors such as social networks, cultural understanding, psychological characteristics, academic accomplishments, marketability, and skills, informs more effective strategies for preparing, recruiting, hiring, and retaining graduates as they transition from higher education to the workforce. Human Capital Theory posits that individuals, students and university staff, participating in WIL programs are making an investment in their own human capital, as they gain practical experience and skills that can improve their work-readiness. Black & Lynch (1996) points out in their study that Human Capital is an important determinant of productivity of a firm. Highlight the importance of Human Capital especially education & employer provided training. In the context of this research, students participating in WIL programs should be better equipped for the job market due to their increased human capital, which results from the practical knowledge and skills gained during WIL. According to this theory, the accumulation of human capital through education and training increases an individual's employability (Black & Lynch 1996). Human Capital Theory also posits that individuals with greater levels of human capital typically exhibit higher productivity and earn higher incomes. This can be applied to the idea that graduates with work-integrated learning experience may be more productive employees and may command higher salaries due to their improved work-readiness. Human capital holds a particularly crucial role within the realm of technological entrepreneurship. A considerable portion of the worth of tech-driven startups is likely contingent on the excellence of the company's workforce, particularly the senior management team (Shrader & Siegel 2007). The theory emphasizes that these investments can result in enhanced job prospects, greater efficiency, and higher

earnings, ultimately benefiting both individuals and the organizations where they are employed post-graduation.

2.3 Theory of Resource-Based View (RBV)

RBV theory focuses on the unique resources and capabilities organizations possess. This theory helps in recognizing the distinct assets each entity brings, such as academic knowledge, industry expertise, or infrastructure contributed by universities and industry partners. A study by Somsuk et al. (2012) The study employs the Resource-Based View (RBV) as a foundational theory to explore how various enabling factors—human, technological, financial, and organizational—affect the success of university business incubators (UBIs). This approach aims to enhance strategic management and improve resource allocation decisions within UBIs. In the context of Work Integrated Learning (WIL), this theory helps evaluate how universities and industries integrate and effectively leverage resources, combining their strengths to optimize the WIL experience for students. This can involve better employability of graduates due to the unique resource combinations as it creates a competitive advantage. Resource-Based View theory offers a valuable theoretical perspective for understanding how various factors can transform into resources that generate a competitive advantage, thereby enhancing the company's strategic prowess (Lubis, 2022).

2.4 Stakeholder Theory

Stakeholder Theory focuses on the interests, motivations, and expectations of various stakeholders. In WIL this theory helps understand the differing interests of universities, students, industries, and regulatory bodies (de Freitas Langrafe et al., 2020).

This research further supports the principles outlined in stakeholder theory literature, emphasizing factors such as knowledge sharing, mutual trust, participatory decision-making, and alignment of stakeholders' interests in strategic planning. Effective Work Integrated Learning (WIL) programs necessitate achieving a harmonious balance among the interests and expectations of all stakeholders. This approach helps in managing potential conflicts and ensuring that programs adequately address the needs of all involved parties. It collectively contribute to enhanced value creation for organizations emphasizing the importance of developing best practices, processes, and strategies for managing educational institutions, which play a crucial role in societal development as it pertains to Higher Education Institutions (HEIs) (de Freitas Langrafe et al., 2020). By acknowledging and attending to the concerns of stakeholders, you can establish a basis for enduring and mutually advantageous university-industry partnerships in Work Integrated Learning (WIL) programs. After reviewing and analyzing existing literature, it becomes evident that the significance of stakeholder management is on the rise. The process of identifying and managing stakeholders is crucial in effective decision-making, strategic planning, issue resolution, and understanding who wields influence within the organization. Recognizing and comprehending the stakeholders relevant to an organization, along with their level of influence or interest, is of paramount importance. An article identifies which stakeholders hold the highest priority for the University of Portsmouth geared towards enhancing the management of university stakeholders by promoting better management practices, creating public value, and contributing to the greater good (Chapleo & Sims, 2010).

2.5 Learning Organization Theory

Learning Organization Theory is relevant for universities and industries involved in WIL as it emphasizes the importance of continuous learning and adaptation. Universities and industries must continuously update their WIL programs to align with changing industry demands and technological advancements. A study was prompted by the recognition that educational methods must undergo continuous adaptation to remain viable advocates establishment of educational systems rooted in knowledge-based constructivism, which would enable students to attain a deeper understanding and achievement (Resnick & Hall, 1998). Learning Organization Theory underscores the need for effective knowledge management & sharing within institutions. This can lead to improved WIL program design, ensuring that they remain up-to-date and effective. The ability to innovate and adapt is crucial for the success of WIL programs. Learning Organization Theory promotes the cultivation of a culture of innovation and flexibility within institutions to respond effectively to the changing demands of students and industries. Institutions and industries consist of highly skilled professionals, faculty and staff who could collaborate to devise a innovative & creative methodology better tailored to accommodate the unique cultural and functional requirements of higher education institutions (Francis, 2014).

2.6 Importance of Skills in making Graduates Work-ready

There is an increasing emphasis on readying graduate students for the professional world. They require a certain number of skills to equip themselves for the race of employability. A lot of scholars have researched along the line with approaches to higher education of graduates through wide and different perspectives. Graduate hiring globally

has been a major challenge for the corporations. Employers' recruitment strategies pose a dilemma in choosing the 'fresh' graduates or 'graduates with some experience' or 'much experienced workers'. It is important for candidates to have different skillsets required for different fields (Pollard et al., 2015). Learning is an ongoing process that all students, employers, and universities should embrace. The labour market and higher education in the 21st century are evolving swiftly due to globalization. These rapid advancements include information and communication technology, diversification in the workplace, a growing role of the private sector, reduced government involvement in ensuring employment for citizens, and an increasing number of students at all levels of education. These factors contribute to heightened competition in the global job market (Qomariyah et al., 2016). Therefore, it is crucial to identify and understand the challenges related to workforce readiness and the essential skill sets required by students from higher education institutions as they enter the job market. Being work-ready entails possessing employability skills that enable individuals to thrive in professional environments. These skills encompass both soft skills like communication, problem-solving, and teamwork, and technical skills such as coding, data analysis, or other domain-specific expertise. Adaptability to evolving job markets, maintaining competitiveness, and continually developing requisite skills are also integral to being prepared for workplace success.

The paper by Raybould and Sheedy (2005) says that Graduates should be proactive in enhancing their personal and professional skills by actively participating in job roles, internships, workshops, and part-time employment opportunities to acquire relevant skills. Researchers Caballero and Walker (2010) say that Application forms, interviews, cognitive

ability tests, personality assessments, and assessment centers evaluate various aspects of performance criteria, yet not all methods are equally effective across all job descriptions. Australian employers also highlight the significance of attributes such as enthusiasm, motivation, ambition, maturity, and personal presentation in evaluating graduate applicants. Additionally, research indicates that proficiency in the English language plays a crucial role in predicting sustained employability (Gokuladas, 2011). Rehman (2014) also provides a perspective through three major skills and attributes that contribute to graduates being prepared for jobs include Communication Skills, Technical/Professional Skills, and Core Employability Skills or Personal Attributes. Companies evaluate whether there is alignment between the graduate's field of study and the job role, as this alignment can lead to lower training costs for new hires. (Humburg and van der Velden 2014). The Australian-based research by Moore and Morton (2015) is focused on perceptions to have the ability of professional writing skills. As in the need of accounting graduates- communication, strong analytical skills, and business-awareness are some of the expectations of the employer according to the author (Pollard et al., 2015). A paper based on area of location, Nigeria by Omoniwa and Adedapo (2017) inferred that students good with numbers, proficiency in reading/writing skills, foreign language, IT skills, field work skills, communication and interaction, certifications in professional courses, general knowledge, Employers assess students' PSA (Problem Solving Ability), adaptability, decision-making, critical thinking, teamwork, leadership, and planning skills before hiring graduates. The study emphasizes the importance of cultivating graduates into critical thinkers and empowered learners. According to Ali et al. (2018) hospitality employers used two critical

tools to measure the compatibility of students- sustainable development and information technology. The study highlighted that employers recognize the significance of sustainability in business operations and how technology can aid in achieving sustainable development. Attributes such as positive attitudes, self-management, adaptability, continuous learning, initiative, and teamwork were identified as crucial skills by students regarding fundamental skills and personal management (TANGARO, 2018). A study identified soft skills including Communication, Teamwork, Organization and Planning, Problem-solving, Professionalism, and Initiative as essential traits (Nilov, 2019). The paper by Mittal (2019) reveals an intriguing discovery that Emotional Intelligence plays a partial mediating role between Employability Skills and Employer Satisfaction when hiring Fresh Engineering IT graduates. Tan et al. (2021) proposed different learning theories and how graduates' involvement in extracurricular activities can improve their employability skills. This literature review underscores that in today's rapidly evolving workplace, the concept of graduates being 'work ready' is crucial as it reflects their potential for job performance and career progression.

2.7 Scope of WIL to improve Work-readiness of Graduates

Employability is a critical focus for both universities and companies. It refers to a graduate's capacity to secure and sustain employment in their chosen field, encompassing their ability to adapt to evolving job markets, stay competitive, and cultivate the necessary skills for workplace success. Work Integrated Learning (WIL) stands out as a vital strategy for enhancing employability and preparing graduates for work. WIL entails experiential learning in authentic work settings, providing students with practical, hands-on experience

that enhances their competitiveness in the job market. It serves to bridge the gap between academic learning and practical workplace demands, fostering skills like problem-solving, communication, and teamwork that are highly valued by employers. The paperwork by National Center for Postsecondary Improvement (1998), has indicated that engaging in formal school-to-work programs, work-based learning, job shadowing, mentoring, internships, and cooperative education positively impacts graduate hiring outcomes. Students need openness to present their skills, maximum participation in universities provides them with a platform. Students are required to become aware learners and not just sink for facts and opinions of their professors (Fallows and Steven, 2000). According to Raybould and Sheedy (2005), the paper discusses the utilization of a specific tool known as GradSkills, which is a three-day intensive skills course consisting of workshops, lectures, and group activities aimed at enhancing graduates' employability by developing their personal and professional skills. Kavanagh and Drennan (2008) states that students are best worked on when they get continuous learning. The author found some notable gaps for business awareness, ethics, professionalism and basic accounting in students that employers mentioned as important and noted that training the students before they turn up to serve the firm would help them in the basic know-hows of real time work. The research by Tomlinson (2008) gives evidence to suggest that when a group of graduates have a similar degree, one needs to add value to their skills to stand apart from others. It is noticeable to see a growing sense amongst students that they have to ‘do all they could’ to make themselves better off in the labour market. Internships, part-time jobs during college years, or summer employment are essential elements of foundational work experience.

According to the paper by Lowden et al. (2011) employers, students, and graduates recognize that placements/internships and work experience are crucial pathways to introduce graduates to the work environment and prepare them for employment. Research by Abas and Imam (2016) requires matching the skills of students, universities and employers to accommodate future workspace. Bravenboer and Lester (2016) contend that there is a necessity to close the divide between academic learning and practical professional experience. They propose a framework that acknowledges both formal qualifications and experiential learning. The paper by Omoniwa and Adedapo (2017) suggests integration of experiential learning methods and work-related programs can impact on developing a more 'work ready' and 'more balanced graduate'. Rowe et al. (2017) underscores the significance of integrating Work-integrated learning (WIL) experiences into the curriculum and ensuring robust assessment mechanisms to support employability outcomes. Bravenboer (2018) investigates the unforeseen advantages of reflection within university-business collaborations. Through a case study approach, the author illustrates how reflection can enrich learning and enhance collaboration between universities and businesses, emphasizing the need for structured reflection opportunities in work-based learning settings. Active engagement from government, higher education institutions, and corporate employers is essential to equip students with these skills even before they graduate and enter the workforce. Employers have expressed concerns about graduates' readiness in workplace skills, attributing some of the shortcomings to the education system. Universities face pressure to equip graduates with relevant skills that align with economic and labor market demands within a limited timeframe. Thus the motive to cover all topics

lowers the quality of education in the universities (Suleman, 2018). There were experiments with techniques such as Vacation Work which served as a way to gain work experience. Foundational training and internship programs were set up. It also suggests that universities lacked practical components in the curriculum (Harry and Chinyamurindi, 2022).

2.8 Importance of University Faculty's & Student's perception

Due to vast course structure and syllabus, the education institutes have an option to cut down the portion or decrease the quality of education to rush in with the curriculum as prescribed eventually having huge costs and losses. It becomes really difficult when universities attract students on the basis of good placements but are not able to achieve it, and at the end it is the student who loses the most in the whole process. It is also highlighted by studies that the work-readiness of graduates can be improved with by implementing WIL models in educational institutions, which will provide the graduates with the hands-on experience of the work environment during their graduation. The literature by Konstantinou and Miller (2021) shows the gap between employability in modern and traditional works. It suggests that incorporating experiential learning into work-based curriculum modules can significantly help bridge the gap between the workplace and the classroom. Another study provides a detailed overview of the diverse WIL practices such as teaching and learning, importance of engagement with stakeholders, maximizing learning outcomes through WIL with support and infrastructure to develop WIL. It points out that in the future, expansion of WIL across multiple industries is expected to continue (Zegwaard et al., 2021). A recent study on skill development in higher education for post-

pandemic employment indicates that educational institutions have primarily been focused on preparing students for traditional, pre-pandemic workplaces. There has been minimal effort to adapt the educational system to meet the evolving needs of various industries in the post-pandemic era. It highlights the need for educational providers to develop an environment of work based learning, moving away from the theoretical bubble of a closed curriculum and also pin points the scope of examination of the current environment in the educational institutions which integrates real work requirements with the curriculum in order to improve the WIL practices (Bayerlein et al., 2022). This literature review reveals that to meet the expectations of students and the needs of employers, a common solution is to enhance the skill levels of graduates, enabling them to thrive in today's globally competitive business environment. It is imperative in this scenario to assess the university perception & the obstacles they are facing while placing graduates in IT domains despite offering quality education as per standard curriculum. There is a need to analyze the university stand with respect to graduate hiring. In order to implement WIL or to develop WIL models the existing landscape of the WIL in the context of industry-university collaboration has to be understood. This study aims to examine the landscape of Work Integrated Learning (WIL) in universities. Despite nearing the completion of their education, many students are still underprepared for the workforce. Analysis of existing research indicates a significant gap between students' perceptions and employers' expectations. Extensive literature, including works by Harry and Chinyamurindi (2022), highlights the critical need to improve understanding of students' transitions into the labor market, especially regarding challenges like high unemployment. Students often put less

effort into developing soft skills such as communication, independent thinking, creativity, social skills, and English proficiency, while employers prioritize these skills highly (Rizwan et al., 2021). This makes it pertinent to analyse the perceptions of students which is a key component to developing skills to equip them for a career in IT domain.

2.9 Major Gaps & Novelties Observed

After conducting an extensive literature review on various aspects, it can be concluded that employability is closely linked to the work-readiness of graduates. The review highlights the following key aspects. High expectations of employers to have the best of skills in the freshers and the notion that students have acquired hands-on knowledge from the university about the field required. Students are built on hopes that their degree will be able to place them in the best job with a very convenient working environment and very high expectations of remuneration during the hiring process. From the future recommendations suggested by studies & the insights derived from the overall literature review it is evident that implementing WIL in universities is the effective way of making graduates work-ready to improve employability. However, there is a gap identified that though studies have suggested WIL as solution to make graduates work-ready, there have been negligible studies on the industry-university collaboration & the current landscape of WIL in universities from the university faculty's & university student's perspective.

2.10 Conclusion

The literature review section offers a comprehensive overview of the theoretical framework and various theories that support the research on enhancing graduates' work-readiness through Work-Integrated Learning (WIL). The theoretical framework includes

Human Capital Theory, Resource-Based View Theory, Stakeholder Theory, and Learning Organization Theory to understand how human capital is developed, resources are utilized, stakeholders' interests are considered, and learning organizations are shaped within the context of WIL. Human Capital Theory underscores the value of practical experience and skills acquired during WIL in boosting graduates' employability and productivity. Resource-Based View Theory highlights the distinct resources contributed by universities and industry partners to optimize WIL outcomes. Stakeholder Theory highlights the importance of balancing the interests and expectations of universities, students, industries, and regulatory bodies for successful WIL programs. Learning Organization Theory emphasizes the necessity for continuous learning and adaptability to ensure WIL programs align with evolving industry needs. The review also explores the crucial skills required for graduates to be work-ready, the role of WIL in enhancing employability, and the perspectives of university faculty and students. Additionally, it identifies gaps in the literature regarding the current state of WIL from the viewpoints of university faculty and students. This research aims to fill these gaps and enhance the understanding of how WIL can effectively prepare graduates for the workforce.

3 : METHODOLOGY

3.1 Overview of the Research Problem

The importance of work-readiness among graduates in India is crucial due to the country's significant role in producing global STEM graduates and the impending surge of these graduates entering the workforce. Despite this, the employability of many graduates remains a concern, particularly in fields such as IT and technology, where they often lack industry-ready skills. Recognizing this urgency, the government, in line with initiatives like the National Education Policy (NEP) 2020, has prioritized enhancing graduates' work readiness. The involvement of organizations such as the Confederation of Indian Industry (CII), the Association of Indian Universities (AIU), and the United Nations Development Program (UNDP) underscores the importance of this effort. Work Integrated Learning (WIL) through university-industry collaboration emerges as a solution to the employability challenge. Studies have emphasized the effectiveness of WIL in equipping graduates with practical skills and experience through collaboration with industries. Innovative models like "Live-in-Labs" and experiential learning embedded in curriculums have shown promise. These practices help bridge the gap between theoretical education and real-world work demands. Moreover, the expansion of WIL practices across various industries is anticipated to grow. Integrating WIL into educational institutions, supported by university-industry partnerships, is essential for meeting the changing needs of both industry and students. The recent endorsement of WIL by the All India Council for Technical Education (AICTE) highlights the importance of these efforts. Undergraduate education offers a

considerable period for learning, skill development, and holistic growth. University-industry collaborations during this period help students become work-ready and equipped with the practical skills needed for their chosen industries. Understanding the current landscape of industry-university collaboration is fundamental to suggesting effective models that address this challenge. It offers insights into existing initiatives, best practices, and areas for improvement, serving as a foundation for future collaboration models.

3.2 Operationalization of Theoretical Constructs

Each of the theoretical constructs, including Human Capital Theory, Resource-Based View Theory, Stakeholder Theory, and Learning Organization Theory, have been incorporated into the objectives for Work-Integrated Learning (WIL) research. These theories have proven highly beneficial in shaping the research questions for each objective. The integration of these theoretical constructs into research questions ensures that its considering multiple dimensions and theoretical lenses, allowing for a comprehensive and well-informed investigation of WIL programs, university-industry collaboration, and work-readiness enhancement.

Objective 1: To understand the role of university-industry collaboration in enhancing the work-readiness of graduates from the university staff's perspective.

Human Capital Theory: This theoretical framework explores how individuals' education and experiences enhance their economic productivity. In this context, the researcher examines how collaboration enhances the acquisition of industry-specific skills and knowledge, assessing whether students' human capital is enhanced through WIL programs. For example, the query "To what extent does participation in university-industry

collaborative Work-Integrated Learning (WIL) programs impact students' employability, skills, and knowledge?" directly corresponds to Human Capital Theory. It investigates how WIL programs influence students' economic productivity and employability, which are fundamental components of human capital.

Resource-Based View Theory: This theory revolves around the concept that the resources of a firm (in this instance, the resources of universities and industry partners) are critical for attaining competitive advantage. This research investigates how universities and industry partners collaborate and leverage their unique resources to create successful WIL programs. This includes identifying what unique resources each stakeholder brings to the partnership and how these resources are combined to deliver effective work-integrated learning. For example, the question, "How do universities and industry partners leverage their respective resources to develop and maintain effective WIL programs?" explores how the unique resources and capabilities of universities and industry partners are combined to create competitive advantages through effective WIL programs, in line with the principles of Resource-Based View Theory.

Stakeholder Theory: In the realm of WIL research, stakeholder theory serves as a tool to analyze the roles and interests of all parties engaged. This theory offers a framework to evaluate how universities, industry partners, students, and faculty perceive their roles and interests within the collaborative process. By examining the expectations of various stakeholders, insights can be gained into the alignment or divergence of collaboration with their objectives. For example, the query "What are the interests and expectations of universities and industry partners in university-industry collaborative WIL programs, and

how do these influence the collaborative process?" explores the diverse roles and interests of stakeholders, underscoring the importance of comprehending stakeholder perspectives in university-industry collaboration, consistent with Stakeholder Theory.

Objective 2: To study the existing landscape of WIL with respect to university-industry collaboration from the university student's perspective.

Human Capital Theory: Here, the researcher is investigating how students perceive the influence of WIL programs on their human capital. This could involve questions such as "How do students perceive the impact of existing WIL programs on their employability, skills, and knowledge relevant to the industry?" This question explores the students' perception of the impact of WIL on their human capital, closely aligning with the concepts of Human Capital Theory.

Learning Organization Theory: In relation to this objective, Learning Organization Theory can be utilized to comprehend how universities adjust to address students' requirements amidst evolving circumstances. This theory helps in exploring the ability of institutions to facilitate learning and create structures that enhance work-readiness. For example, questions about "How adaptable and responsive are universities in optimizing and delivering WIL programs in response to student feedback and evolving industry needs?" investigates the adaptability and learning capacity of universities in response to the evolving needs and feedback from students and the industry, which is a fundamental aspect of Learning Organization Theory.

Objective 3: To suggest a model for WIL for universities to adopt for improving university-industry collaboration and work-readiness of graduates. Resource-Based View

Theory: The development of a model for WIL involves the identification and leveraging of resources from universities and industry partners. The theory is particularly relevant here to "How can universities and industry partners combine their unique resources and capabilities to develop an effective model for WIL that enhances university-industry collaboration and work-readiness?" This question directly addresses the core principles of Resource-Based View Theory by focusing on the collaborative utilization of unique resources to create a model for WIL.

Stakeholder Theory: Since this research advocates for a WIL model, it is essential to take into account the interests and expectations of all stakeholders involved, such as universities, industry partners, and students. The model should cater to their requirements and address their concerns, adhering to the fundamental principles of stakeholder theory. Questions such as, "What are the key expectations and concerns of universities and students regarding the proposed WIL model, and how can these be addressed to align with stakeholder interests?" This question considers the diverse interests and expectations of stakeholders in the design of the WIL model, aligning with Stakeholder Theory, which emphasizes understanding and addressing stakeholder needs.

By integrating these theoretical frameworks across the three objectives, this study aims to develop a holistic approach for comprehending, assessing, and enhancing WIL programs within university-industry collaborations. This multi-dimensional approach provides a well-rounded perspective that can contribute to the design of effective models and strategies for WIL.These research questions are rooted in established theories and frameworks, enhancing the rigor and depth of the study.

3.3 Research Purpose and Questions

The study seeks to explore the capabilities of Work-Integrated Learning (WIL) within Indian universities, focusing specifically on technology-related roles. It recognizes that students spend a significant portion of their undergraduate years in universities, presenting an opportunity to implement WIL effectively. Collaboration between universities and industries in WIL is crucial to prepare students for evolving careers, enhancing their learning experience throughout their undergraduate degrees. In India, there is a growing emphasis on industry-academia linkages to produce employable graduates, with many educational institutes already having some form of industry collaboration. However, the study suggests that these collaborations should go beyond funding and focus on enhancing the curriculum with work-based learning experiences. Technology roles require a diverse skill set, encompassing problem-solving, data analysis, technical expertise, and an understanding of industry trends. Work-Integrated Learning (WIL) is crucial in preparing students with practical skills through real-world experiences. Additionally, it fosters the development of essential soft skills such as communication and teamwork, which are critical for thriving in technology-related careers. In this context, WIL becomes a valuable tool for enhancing graduates' readiness for the workforce and improving their employability. The study specifically examines the current state of WIL in AICTE approved universities in Bangalore, shedding light on the extent of industry-university collaboration, challenges faced by universities in implementing WIL, the benefits of WIL for graduate hiring, and the implications for universities, students, and employers.

Research Questions Based On The Objective 1

To study the existing landscape WIL with respect to university-industry collaboration in AICTE (All India Council for Technical Education)' approved institutes offering undergraduate courses in Engineering/Technology in Bangalore from the university staff's perspective.

1. What is the current level of familiarity of WIL programs in AICTE-approved institutes from the university staff's perspective?

The question will address the level of familiarity of the staff, if they are very familiar/somewhat/not at all etc. In what ways are they familiar with WIL programs, if it's through guest lectures by resource persons, projects, ideathons etc. Their opinion on whether the WIL programs are thriving/doing well/struggling etc.

2. How do university staff perceive the benefits and challenges of university-industry collaboration for WIL programs in these institutes?

The question will address perception of the staff about whether WIL is considered extremely important/very important/moderately important etc. Whether it has improved student outcomes, enhanced reputation of the institution etc., If there is lack of resources, difficulty in securing industry partnerships etc.

3. What factors influence the university staff's involvement in designing and implementing of WIL programs in these institutes?

The question asks about the level of involvement, is it high/minimal/not at all etc. Factors that influence involvement such as lack of time & support from management, lack of clarity of role etc. The role staff should play, if they are decision makers, or provide inputs etc.

Their opinion about the importance of staff involvement, necessary resources, satisfaction with support and resources, ways to improve involvement, motivations for involvement, and the impact of staff involvement on the students' learning outcomes.

4. What measures are in place to ensure the quality and effectiveness of the WIL programs in these institutes from the university staff's perspective?

The question covers various aspects of program evaluation, such as regular evaluations of program outcomes, monitoring student performance and satisfaction, collaboration with industry partners, and assessment of program curricula etc. Additionally, the questions assess the frequency of evaluations, responsibility for monitoring student performance, satisfaction with current measures, and the type of collaboration contributing to the program quality.

5. What is the extent of collaboration?

This includes identifying the number of industry partners involved in WIL programs, types of programs and initiatives that are being implemented, duration and frequency of collaboration. The presence of processes to evaluate the effectiveness of WIL programs. The degree to which WIL programs enhance the professional growth of students. The options cover various collaboration types such as funding, infrastructure, internships, projects, guest lectures, and curriculum tie-ups.

6. What is the nature of collaboration?

This includes identifying if it is a formal or informal, goals & objectives of collaboration, the roles and responsibilities of each partner, and the strategies and mechanisms used to

foster collaboration. It also includes assessing if the collaboration is effective in achieving the goals and objectives of WIL programs.

7. What are the outcomes of collaboration?

This includes assessing the impact of the collaboration on students, industry partners, and the overall educational system. This could include student outcomes like career readiness & employability. It involves evaluating student employability, career readiness, the benefits for industry partners in terms of access to talent and knowledge, the impact on job-skills alignment and student readiness for the workforce, and the overall quality of education. Also the level of satisfaction with the outcomes of collaboration.

8. What are the barriers and facilitators?

This includes identifying the factors that enable or hinder collaboration, such as cultural differences, organizational structures, funding etc. Resources available for the partnership funding, staff, equipment, the main barriers to establishing and maintaining university-industry partnerships, if the current organizational structure of the institute affects collaboration positively/negatively/has no effect. The measures that can be taken to overcome these barriers, including improving cultural compatibility, aligning goals and objectives, and increasing resources.

Research Questions Based On The Objective 2

To study the existing landscape WIL with respect to university-industry collaboration in AICTE approved institutes offering undergraduate courses in Engineering/Technology in Bangalore from the university student's perspective.

1. What is the students' awareness and understanding of WIL programs in AICTE-approved institutes?

This will assess the level of familiarity of students with WIL programs, if they are very familiar/somewhat/not at all etc. The types of WIL programs students have participated or are aware of, guest lectures, internships, projects etc. If so how frequently & what is the duration of programs. If these programs are paid or included with the tuition fees etc.

2. How do students perceive the benefits/challenges of participating in WIL programs in these institutes?

This will explore the students' perception of benefits of participating in WIL programs. If it has improved their knowledge, provided hands on experience etc. The level of student satisfaction, if they are highly satisfied, dissatisfied, neutral etc. The significant barriers to students' participation in WIL programs, such as financial constraints, difficulty balancing work and study, lack of information, concerns about program quality, and other factors.

3. What factors influence students' participation in WIL programs at these institutes?

This will throw light on motivation behind students' participation in WIL programs, including hands-on experience, applying classroom knowledge, networking, improved employability after graduation etc. Students' level of comfort with the idea of participating in WIL programs will be assessed. Whether or not students have participated in WIL programs before, overall experience with WIL programs, the type of WIL programs they would be most interested in participating in- including internships, co-op programs, service-learning programs, research projects etc.

4. What are the students' expectations and experiences of WIL programs in these institutes, and how do these impact their academic and career development?

This will address what are student's experiences with WIL programs in benefitting their careers, improving employability skills, networking opportunities, real-world work experience, improved industry knowledge, etc. It will also cover topics such as inadequate support from the institute, unavailability of relevant programs, conflict with academic schedule etc. The students' suggestions to improve the WIL, whether to have more programs or better co-ordination with their curriculum or improvement in the organizing & accessibility of programs. Satisfaction with WIL programs if they are highly satisfied/moderately/not at all etc. What are their expectations from WIL programs, hands-on, real-world experience, relevance to their field of study, opportunities to network with industry professionals etc. Factors influencing the decision to participate, impact on academic performance and career readiness, and whether participating in WIL programs is essential for future career success etc.

Research Questions Based on The Objective 3

To suggest a model for WIL for universities to adopt for improving university-industry collaboration and work-readiness of graduates.

1. What are the current models of WIL being used by universities in AICTE-approved institutes offering undergraduate courses in Engineering & Technology in Bangalore?

The question will help describe the type of WIL model currently being used by universities. The frequency of implementing, the mandatory or optional nature of WIL programs, the presence of formal partnerships with industry partners, the structure and delivery of WIL

programs. The ways in which universities measure the success of their WIL programs, including student feedback and evaluations, industry partner feedback and evaluations, and assessment of student learning outcomes, etc.

2. What are the challenges and limitations of the current models of WIL in improving university-industry collaboration and work-readiness of graduates?

The questions will describe obstacles in improving university-industry collaboration, the impact of the lack of standardization in WIL programs on work-readiness of graduates, the universities' role in ensuring work-readiness, along with potential improvements to the current models of WIL. The questions cover a multiple factors that may affect the effectiveness of WIL programs, such as lack of resources, resistance to change, lack of industry engagement, misaligned goals and objectives, poor communication and coordination, along with the need for stronger partnerships and collaboration between universities and industries, increased standardization, quality control. It will also cover how the current models of WIL can be improved and more resources can be dedicated to WIL.

3. How do universities perceive the importance of WIL in improving university-industry collaboration and work-readiness of graduates?

This question aims to explore universities' perspectives on their contributions to improving graduates' work-readiness, the effectiveness of existing Work Integrated Learning (WIL) programs, the role of WIL in preparing students for careers and enhancing employability, perceived advantages of WIL for students and industry partners, the significance of robust industry partnerships for implementing WIL initiatives, and universities' dedication to enhancing WIL programs and fostering collaboration with industries.

4. What are the aspects that influence WIL program's success in improving university-industry collaboration and work-readiness of graduates?

The questions will describe the availability of resources for successful implementation of WIL programs, the effectiveness of current WIL programs in meeting the needs of both students and industry partners, the value of current WIL programs in providing real-world experience to students, the satisfaction of industry partners with current WIL programs, and the possible improvements that could be made to current WIL programs. The questions seek to gain understanding of the factors that contribute to the effectiveness of Work-Integrated Learning (WIL) programs and to pinpoint areas where current programs can be enhanced.

5. How does university-industry collaboration impact the graduates' work-readiness from AICTE-approved institutes?

The question will describe extent of impact, contribution of collaboration to work-readiness development, importance of collaboration, opportunities provided to graduates, effectiveness of collaboration in workforce preparation, and impact on job prospects. It will also aid in describing suggestions on how collaboration can be improved to better enhance work-readiness skills.

6. What are the best practices for university-industry collaboration in WIL programs that have been successful in improving work-readiness of graduates?

The question will describe the factors for successful collaboration, best practices, the role of industry partners in program design and implementation, the importance of clear expectations and guidelines, and the impact of strong university-industry relationships on

graduate work-readiness. It will also describe the benefits of involving industry partners in WIL programs, such as aligning the program with industry needs/expectations, providing students with networking opportunities, and improving the quality of the WIL experience. Additionally, it will also present an investigative report on how clear expectations and guidelines ensure that students understand the goals and outcomes of the program, and how universities with well-established industry partnerships have seen improvements in graduate job prospects, industry connections, and the quality and cost-effectiveness of WIL programs.

7. How can universities better support students in the transition from WIL programs to the workforce?

This question will help describe the strategies and resources that universities can provide to students to help them transition from WIL programs to the workforce such as providing job search resources, workshops, and networking opportunities to students. It will also cover the role of WIL program coordinators in supporting students, resources that universities should provide to students, and steps that universities can take to assess the success of their efforts. The answers to these questions will be all-encompassing, with options ranging from providing career counselling services, workshops, job search websites all the way to tracking job placement rates and alumni satisfaction levels.

8. What role can the government, industry, and universities play in improving WIL programs and university-industry collaboration in AICTE-approved institutes?

This question will help describe the level of involvement of the government, the role of industries in improving WIL programs, how universities can support the industry, the role

of universities, and how the government and industry can support universities. It will also cover topics such as providing access to resources, collaborating on specific projects, and offering mentorship and guidance to help students transition from WIL programs to the workforce.

9. How can universities measure the effectiveness and impact of WIL programs in improving university-industry collaboration and work-readiness of graduates?

This question will help describe various aspects of evaluation, the metrics used to evaluate the success of WIL programs such as student job placement rates, feedback from industry partners, student satisfaction surveys. How universities can measure impact of WIL programs through surveys of employers who hire WIL program graduates, by comparing the job performance of WIL program graduates to non-WIL program graduates, by tracking graduates' salaries and career advancement etc. How universities can ensure that WIL programs have a long-term positive impact on graduates' careers through surveys, tracking, collaboration, partnerships etc.

10. What is the model outline for WIL to improve WIL in AICTE approved institutes?

The model outline for WIL will be suggested based on the analysis of the primary & secondary data sources to analyse the answers to above questions. It will offer students relevant skills and knowledge taking into account the industry needs in order to choose the right career path while pursuing their university education. It will include modules which will constantly train students to be job ready while creating strong partnerships with industry partners. It will also include a variety of WIL program options, such as co-op programs, internships, and experiential learning programs, etc, to cater to different student

needs and interests. Options to provide career counselling, job search support, networking opportunities, and post-program mentorship to help students transition from WIL programs to the workforce will also be included. Methods to measure the impact of WIL programs on graduates' to cater to different student needs and interests with regular evaluation & feedback.

3.4 Research Design

The research design for this study is characterized as a "Quantitative, Descriptive, Cross-sectional, Non-experimental, Analytical, Field Research" approach. This design is carefully tailored to investigate the existing landscape of Work Integrated Learning (WIL) concerning university-industry collaboration in AICTE-approved institutes offering undergraduate courses in Engineering/Technology in Bangalore, India.

A Breakdown of the key features of this research design: Quantitative: The primary data collection method in this study is through surveys, which predominantly employ closed-ended questions that yield numerical data. This quantitative approach will enable the researchers to quantify and analyse the responses of university staff and students systematically. Descriptive: The primary goal of the study is to describe and profile the characteristics, opinions, and behaviours related to WIL from the perspectives of university staff and students. Through a descriptive research purpose, the study seeks to provide a comprehensive understanding of the current state of WIL in the specified context. Cross-sectional: The study is designed to capture a snapshot of the situation at a specific point in time. Rather than tracking changes over an extended period, it focuses on the status of WIL in AICTE-approved institutes at a particular moment, which is characteristic of a cross-

sectional design. Non-experimental: In line with the nature of survey research, this study does not involve the manipulation of variables or experimental interventions. Instead, it relies on the observation and collection of data from respondents without introducing any controlled changes. Field Research: Surveys are conducted in the natural setting or context of the participants, and in this case, university staff and students will be surveyed within their educational environments in Bangalore. This "in-the-field" approach allows for the collection of data in the authentic context where the phenomena of interest occur. Analytical: Researcher is not conducting new empirical observations or experiments, but rather analysing the existing data, surveys, and information to analyze the current landscape and propose a model. While using surveys to collect data from university staff and students, the core of the study's foundation is analytical, as the researcher aims to analyze the current situation and develop recommendations based on existing information & therefore, "Analytical" is a suitable categorization for this study.

In summary, the research design combines a quantitative survey methodology with a descriptive, cross-sectional, non-experimental, analytical field research approach to comprehensively investigate and describe the current landscape of Work Integrated Learning in the specified academic institutions, taking into account the perspectives of both university staff and students. This design is well-suited for the research objectives of understanding the existing state of WIL and proposing a model for its enhancement.

3.5 Population and Sample

The universe of the study will comprise all the AICTE approved institutions providing undergraduate courses in the Engineering & Technology stream in Bangalore.

AICTE is the ‘All India Council for Technical Education’. The All India Council for Technical Education (AICTE) was established in November 1945 as a national-level advisory body tasked with surveying technical education facilities and fostering coordinated development across the country. In accordance with the National Policy on Education (1986), AICTE was entrusted with statutory authority for planning, establishing norms and standards, ensuring quality through accreditation, prioritizing funding in key sectors, overseeing monitoring and evaluation, and maintaining uniformity in certifications and awards, thereby managing technical education in India.

In the academic year 2022-2023, AICTE sanctioned accreditation to 5,878 educational institutions nationwide, with 498 of these institutions located in Karnataka. Among these, 110 institutes were approved specifically for undergraduate Engineering/Technology courses in Bangalore. Karnataka comprises thirty districts organized into four Educational Divisions, each with its headquarters in Bangalore, Belgaum, Gulbarga, and Mysore.

There are 110 institutes in the Educational Divisions of Bangalore for undergraduate courses in Engineering/ Technology in Bangalore approved by AICTE in 2022-2023 and all of them fall under the purview of this study. There is of total of 44951 students enrolled in the above 110 universities during the year 2022-2023.

3.6 Participant Selection

Individual university staff members were selected from the population using use simple random sampling technique not influenced by personal preferences or biases. This

approach ensured that each staff member has an equal chance of being selected, and this randomness was important to maintain the representativeness of your sample in order to achieve the research objectives with a specific level of confidence and precision.

Respondent no. 1 University Staff - Out of 110 institutes (represented by their staff or a placement officer) from Bangalore division, a sample size of approximately 97 university staff members were selected so that 95% confidence level is obtained with a 5% margin of error, assuming a 50% estimated proportion through simple random sampling. The sample has been chosen to represent the population in terms of geographical distribution, type of institution (government or private), and size of institution (number of students enrolled).

Respondent no. 2 University Students - The sample of students were selected through random sampling. From the total of 44951 students, a sample size of approximately 384 UG students in engineering/technology courses so that 95% confidence level with a 5% margin of error is obtained, assuming a 50% estimated proportion were selected.

3.7 Instrumentation

Proper instrumentation is essential to ensure the validity, reliability & accuracy of my research findings.

Sources of data: For the descriptive research on AICTE approved institutions providing undergraduate courses in Engineering & Technology stream in the state of Karnataka, the following sources of data would be considered: Primary Sources of data such as Survey questionnaires administered to the selected institutions to gather information from the 2 sets of respondents, representative of the university staff & the second set of respondents

will be students. Secondary sources, such as institutional records, provide details regarding student enrolment figures, course offerings, and the infrastructure and facilities available at the institutions concerned. Published studies on the quality of education in Engineering & Technology courses in Bangalore and in other similar regions would provide useful information on best practices and challenges faced by these institutions. Government reports on education and institutions provide data on the quantity of institutions offering Engineering/Technology courses, student enrolment figures in these programs, and the availability of infrastructure and facilities within these institutions.

Surveys: Questionnaires were designed to gather information from participants. The survey questionnaire is a vital instrument used to collect data in the research study on the current state of Work Integrated Learning (WIL). It is distributed to two groups of respondents, college placement officers/staff and students. The questionnaire consists of multiple-choice questions and scales. The multiple-choice questions will allow respondents to provide specific information about their perceptions and experiences with WIL and university-industry collaboration.

Measurement Scales: Scales were used to measure variables such as agreement or disagreement with certain statements, level of importance, and frequency of certain behaviours or experiences. Scales can be used to capture more nuanced and complex information than can't be captured through simple multiple-choice questions.

Likert scales are used in questions that ask for respondents' opinions, attitudes, or perceptions. Some questions could be categorized into nominal scales. Multiple Choice or Categorical Scales rather multiple-choice options for respondents to select from are also

used. Some questions involve an ordinal scale when asking respondents to rank items by significance.

Ethics and human consideration subjects' issues: To safeguard the rights and welfare of participants throughout the process, the following guidelines will be adhered to. Adhering to guidelines by SSBM: regarding the code of ethics during the research process. Informed Consent: Participants will receive information about the study's objectives, the nature of their involvement, and any potential risks or benefits before consenting to participate. They will have the choice to withdraw from the study at any point. Confidentiality: Participants' privacy and confidentiality will be rigorously upheld. Any data collected from participants will be treated as confidential and utilized solely for research purposes. Data Security: Collected data will be stored securely and protected against unauthorized access or theft. Deception: Participants will not be misled or deceived in any way during the research. Coercion: Participants will not be coerced or pressured into participating in the research. Anonymity: Participants will be given the option to remain anonymous if they wish. Vulnerability: Special consideration will be given to participants who may be vulnerable, such as minors or individuals with disabilities.

Quality assurance mechanisms include several steps to ensure the study's rigor:

Pre-testing: The questionnaire or survey underwent pre-testing with a small group of participants to identify and correct errors or ambiguities before broader administration. Pilot Testing: The entire study was piloted on a small sample to assess the feasibility, effectiveness, and accuracy of data collection procedures and analysis methods. Data Quality Control: Measures were implemented to ensure high-quality data, including

double-checking data entry, using reliable measurement tools, and employing validated scales and questionnaires. Sampling: Sampling methods were chosen to minimize selection bias and ensure appropriateness for the research question and population. Data Analysis: Data analysis utilized suitable statistical methods, and findings were accurately and appropriately reported. Peer Review: The study underwent peer review by experts in the field to provide independent evaluation of methodology, results, and conclusions.

3.8 Data Collection Procedures

The survey questionnaire will undergo meticulous design and testing to ensure reliability, validity, and alignment with the study's objectives. It will include questions addressing all three study objectives, as well as inquiries about institutional demographics. Data will be gathered using a survey questionnaire administered via Google Forms, featuring multiple-choice questions and rating scales. Participants will access the online survey through a provided link or embedded code, selecting answers that best fit their responses. Responses will be automatically collected by Google Forms and can be reviewed and analyzed using its reporting tools, exporting data in CSV format. This approach offers a cost-effective means to gather data from a broad participant base efficiently, facilitating comprehensive analysis of the WIL landscape.

3.9 Data Analysis

To study the existing landscape of WIL with respect to university-industry collaboration from the university staff's & student’s perspective, descriptive statistics & inferential statistics will be used. Descriptive data analysis involves summarizing and describing key characteristics of a dataset without drawing conclusions about the broader

population. Descriptive statistics were employed to summarize the data and outline the distribution of variables pertaining to university-industry collaboration. The study did not utilize statistical analysis because its focus is primarily on describing data rather than making inferences through statistical testing. Visual Representation: visual representation has been effectively done through bar charts, pie diagrams or similar graphical methods. Qualitative Insights : qualitative responses accompanying the quantitative data, were used to provide context or explanations/elucidate the reasons for the observed patterns. Calculate Percentages: Identify Most and Least Familiar Activities: Comparison Between Activities: Create a Summary Table Open-ended questions asking respondents to provide rich contextual information. Feedback for Improvement: If the data indicates lower familiarity with certain activities, consider using the findings to gather feedback on how to improve awareness or engagement in those areas. Tools like Spreadsheet Software (e.g., Microsoft Excel, Google Sheets) have been utilized for descriptive data analysis tasks such as calculating percentages, creating bar charts, and generating summary tables. The objective of descriptive data analysis is to provide a comprehensive and detailed overview of the dataset without making broader interpretations. Visualization tools and basic summary statistics are essential for achieving this objective. In the context of understanding the landscape of Work Integrated Learning (WIL), where the data collected is quantitative and the analysis focuses on description rather than inferential statistics, it is crucial to align the analysis with the data's characteristics and the study's goals. Regarding proposing a model for WIL that universities can adopt to enhance university-industry collaboration and graduates' work-readiness, the following methods will be employed: Cluster Analysis: This

method will be used to group University & Industry partners based on their resources in terms of university-industry collaboration practices. Factor Analysis: Factor analysis will be employed to identify underlying factors that explain how these strengths can be utilised between University & Industry Partners to derive a frame work for WIL. These analytical approaches are chosen to provide insights into effective models for WIL, tailored to foster stronger collaborations between universities and industries while preparing graduates for the workforce.

3.10 Research Design Limitations

Lack of Causality: It can describe and analyze the current state of WIL, but it cannot determine why certain conditions exist or how they have come about. This limitation can make it challenging to provide a deeper understanding of the aspects influencing WIL. Cross-Sectional Design: This design is suitable for describing the current state of WIL but does not allow for tracking changes or trends over time. Representativeness: Although efforts have been made to ensure representativeness in terms of geographical distribution, type of institution, and size of institution, there may be subgroups or unique contexts within the population that are not adequately represented. This could affect the generalizability of the findings.

3.11 Conclusion

The study employs a blend of quantitative, descriptive, cross-sectional, non-experimental, analytical, and field research approaches to effectively address its objectives. Careful consideration was given to selecting the population and determining the sample size using random sampling techniques to ensure the sample's representativeness and

enhance the study's confidence and precision. Including university staff and students provides a comprehensive perspective on Work Integrated Learning (WIL). Rigorous measures such as proper instrumentation, adherence to ethical guidelines, and quality assurance mechanisms like pre-testing, pilot testing, and data quality control bolster the study's reliability and validity. During data analysis, descriptive statistics are utilized, focusing on summarizing rather than establishing causality due to the study's cross-sectional design, which does not track changes over time. Self-reported survey data may be subject to response bias. Efforts to ensure representativeness may leave certain subgroups underrepresented, potentially limiting the generalizability of findings. The study's reliance solely on quantitative data means qualitative insights are not captured. Despite these limitations, the research design is poised to significantly contribute to understanding Work Integrated Learning in AICTE-approved institutes in Bangalore. It offers valuable insights and recommendations for enhancing university-industry collaboration and improving graduates' readiness for the workforce.

4 : **RESULTS & DISCUSSIONS**

This chapter provides the major findings of this research.

4.1 Analysis of research question one – Perception of Staff on WIL

In order to study the existing landscape from the university staff's perspective, the current level of familiarity, in ways are they familiar with WIL programs, the role staff should play, their opinion about the importance of staff involvement, necessary resources, satisfaction with support and resources, ways to improve involvement, motivations for involvement, and the impact of staff involvement on the students' learning outcomes etc were explored.

Being asked about level of familiarity 84.2% of the faculty responded that they were very familiar, 15% have heard of them but did not have enough information that is they were somewhat familiar. 1% responded that they haven't heard at all.

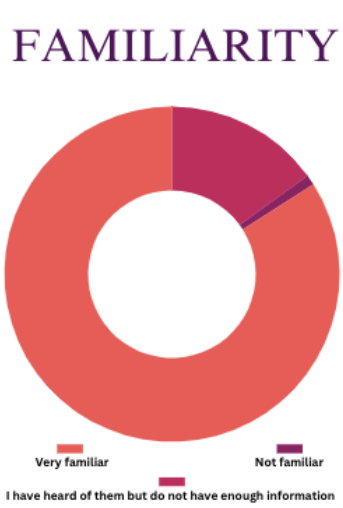


Figure 4.1.a Level of Familiarity

The type of WIL they were familiar 72% responded that they were familiar with short term programs such as Workshops, Guest Lectures, Funding/Sponsorship for events, 20% were familiar with Long term such as Internships, Co-op programs, job shadowing, Service-learning programs, Research projects & 7% with both long & short term.

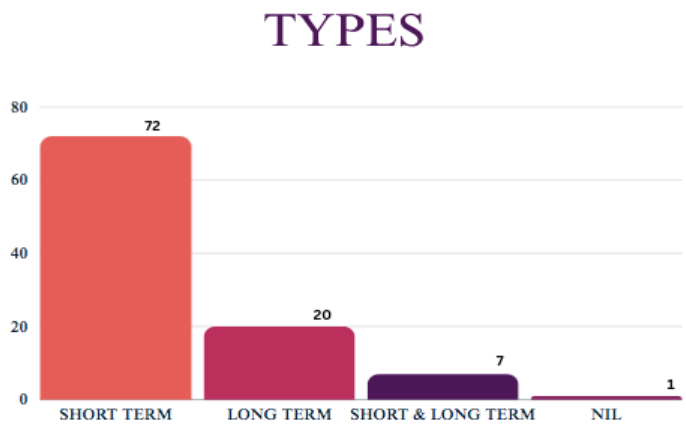


Figure 4.1.b Type of WIL

Role the university staff play in the implementation of the programs. 58.3% provide input & feedback. 33.3% were key decision makers & 8.3% played no significant role.

Figure 4.1.c Role of Staff in Implementation

When asked about what motivates the staff to be involved in the design and implementation of WIL program 82% reported passion for student success was the major reason to be motivated.

Whereas 10% responded as opportunity to work with industry partners, for career advancement opportunities.

Figure 4.1.d Reason for Motivation

About being asked about factors that influence the level of their involvement in the design and implementation, 34% reported it was lack of clear role and responsibilities & 25% as lack of time, 23 % reported to lack of resources.

When asked if the universities staff believe that their involvement in designing and implementation of programs affect the students learning outcomes in their Institute. 51.9% reported it as a significant impact & 30.8 reported has having a moderate influence on students' learning outcomes. Only a very minor population responded as having a minimal or no impact.

Being asked about resources for university staff in order to effectively participate in the design and implementation of WIL program 51% reported that are adequate training and professional development opportunities were most essential. For 30% it was adequate support from the industry partners & 15% reported adequate funding as most essential resources to effectively participate in the design & implementation of the program.

Their opinion on whether the WIL programs are thriving/doing well/struggling etc. in their college/university according to them, 72% responded that it was inadequate.

91% reported that they are not satisfied with WIL programs' status currently at their institution .

About staff's opinion if university- industry collaboration is critical to success of WIL 98.1% reported that it is critical.

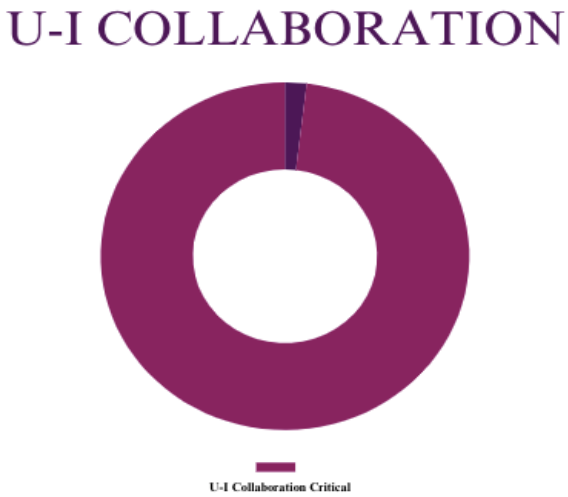


Figure 4.1.e Importance of U-I Collaboration

About being asked how University industrial collaboration could support the career development of students, 94% responded that it would lead to increased job opportunities for students, would bring about enhanced curriculum, give hands on experience to students and would increase resources and support from industry partners.

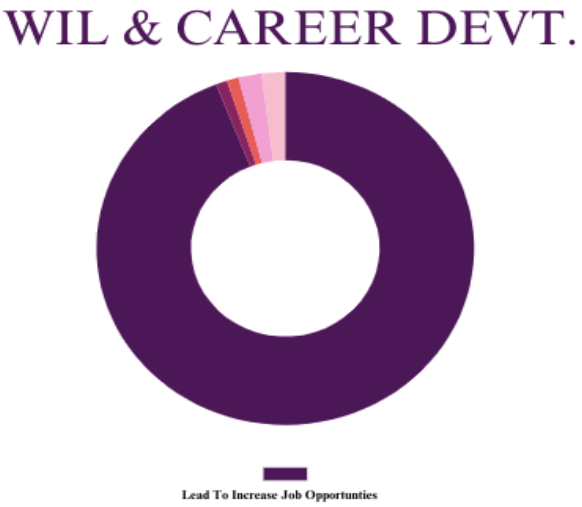


Figure 4.1.f Impact of WIL on Career Development

About being asked what was important factors in University industrial collaboration to meet the needs of both partners, 30% there was a need for improve alignment of goals and expectations between partners, 20% improved communication and relationship between partners was most important factors. 26% reported government specifications & regulations. 24% reported all the above factor including involvement of students were the most important factors.

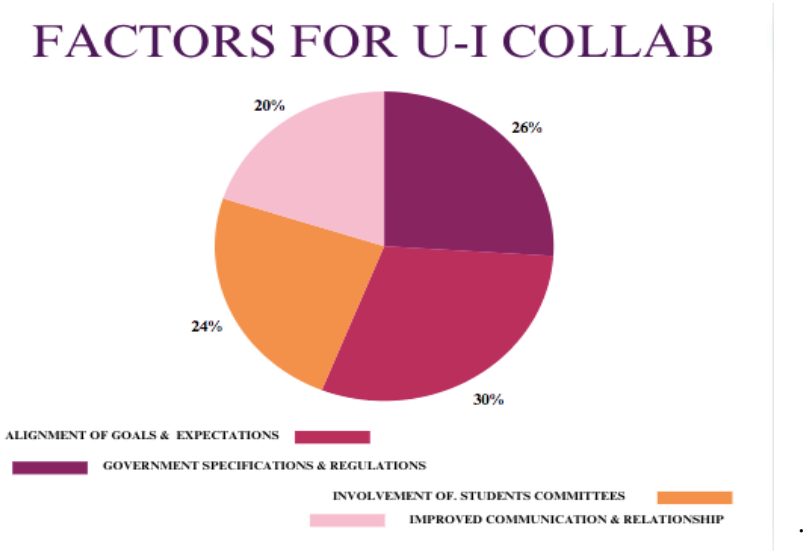


Figure 4.1.g Most Important Factor for U-I Collaboration

Understanding the nature of collaboration includes identifying the goals & objectives, and duration & frequency of collaboration. The extent of collaboration included identifying the number of industry partners involved in WIL programs, types of programs & options covered under umbrella of collaboration such as funding, infrastructure, internships, projects, guest lectures, and curriculum tie-ups etc.

Regarding the overall goals & objectives of the collaboration between the institute and the industry partners 83.6% reported that it is to provide students with real world experience, to increase industry involvement in education, to enhance students employability skills, improved curriculum design, work readiness & real world experience, more job opportunities & improved reputation of college/university all fall under the overall goals of collaboration. Regarding the primary goal of collaboration, majority answered that it was to provide more job opportunities for students.

The university staff were asked about what type of programs were conducted. 76% responded that Short term programs such as Workshops, Guest Lectures, Funding/Sponsorship were conducted. And 24% responded that Long term programs such as Internships, Co-op programs, job shadowing, Service-learning programs were conducted in their institutes. Regarding the frequency of collaboration with the industry partners 30.8% reported quarterly collaboration, 23.1 reported Annually. About the average duration of the programs, 63% reported one-week duration, 26.9 staff reported that there were not sure about the duration of the program.

With respect to the number of WIL Collaboration partners. With respect to the number of long-term partners, 66.7 % reported that there was no long term established partners, 16.7% reported as having 1-2 & 3-5 long term partners. Specifically about number of short-term partners, 68% reported that there were 1-2 established short-term partners, 25% reported as having 3-5 short term partners.

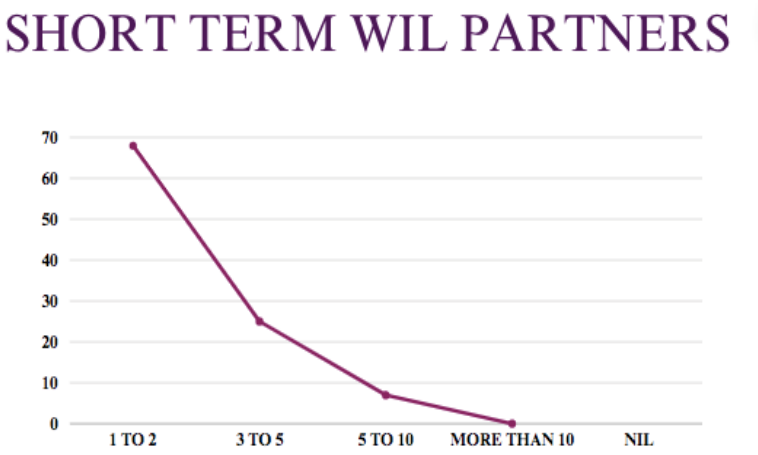


Figure 4.1.h Number of Short Term Partners

In order to understand the landscape of university staff's perception of the outcomes of collaboration, questions were asked about impact of the collaboration on the overall educational system & stakeholders from the level of satisfaction. Other aspects such as benefits/outcomes, challenges, resources, aspects such as program evaluation assessment of program, frequency of evaluations etc. were also identified.

Being asked about the general benefits that has been observed with respect to student outcomes of university industry collaboration 83.3% reported that career readiness in terms of personal development has improved & 66.7% reported that there has been no improvement in career readiness in terms of job opportunities. Majority also reported that there were improved student outcomes with respect to Networking and Mentoring, Soft Skills development, Industry Insights, Innovation and Entrepreneurial skills etc.

With respect to challenges faced by the university the 56% responded that all factors such as cultural differences between university & industry partners, difficulty to get industrial partners 40%, lack of government support, lack of resources such as funding & infrastructure were involved. If they were to pick one factor the majority responded that the major challenge was to get the industrial partners.

Regarding challenges for the level of involvement of staff for design & implementation of WIL programs, 60% reported Lack of clear role & responsibilities as the major reason. 35% reported Lack of content & program structure for implementation.

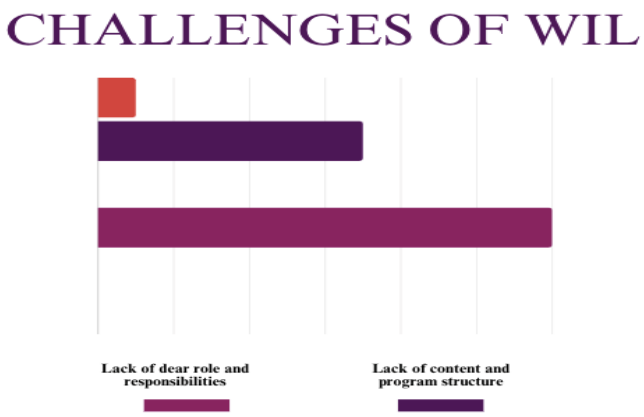


Figure 4.1.i Challenges for Staff Involvement

In order to understand the landscape regarding the existing measures, evaluations & assessment to ensure the quality and effectiveness a WIL programs, 37.2% reported evaluations & assessments were conducted. 26% reported that feedback from industry partners and students were collected. 56% reported that monitoring of student performance was done.

About the frequency of evaluations to access the quality/effectiveness of the programs 70% reported annually it was done & interesting to note that 21% reported were not sure.

On being asked about the structure of the model 57.7% responded that a combination of on campus & off campus structure is what is mostly followed. 25% reported that they are not sure about an existing structure as such. With respect to the nature of the existing WIL program if its mandatory or optional for students, 46.2% reported that it was optional for students & 26.9% were not sure about the same.

With respect to suggesting steps to improve the WIL programs, 66% of the staff suggested that there is a need for ore industry partnerships, 29% suggested improved program design and implementation.

Regarding if the organizational structure of the institute impacted the WIL programs, 81% reported that it impacted & 14% reported they were not sure.

Regarding level of impact of organizational structure of the institute on WIL programs, 25% reported that it impacted positively, 55% reported there not aware of the level of impact & another 20% reported it impacted negatively.

Regarding the perception of university staff about what should be the primary role of the industry partners in the existing WIL programs, 49% reported that it is to provide students with job opportunities, 39% reported that it is to provide industry expertise & knowledge 12% reported that it is to provide funding & infrastructure aid to institutions.

With respect to if government must play a significant role in establishing WIL is existing, reported 76% reported yes and 22% reported not sure.

Regarding what are the roles the government can play in establishing WIL, 37% reported making policies at universities level to make WIL mandatory would be the role. 55% reported that along with making WIL policies at universities mandatory, providing funding & infrastructure aid to universities, providing policy direction to industries to allot particular no. of seats to students, setting up standard review & assessment mechanisms such as government counsellors across the universities. This is in order to monitor & measure the impact of WIL programs each year guiding students transition from WIL

programs to the workforce, providing recognition to universities & industries following government protocols to establish WIL are all essential.

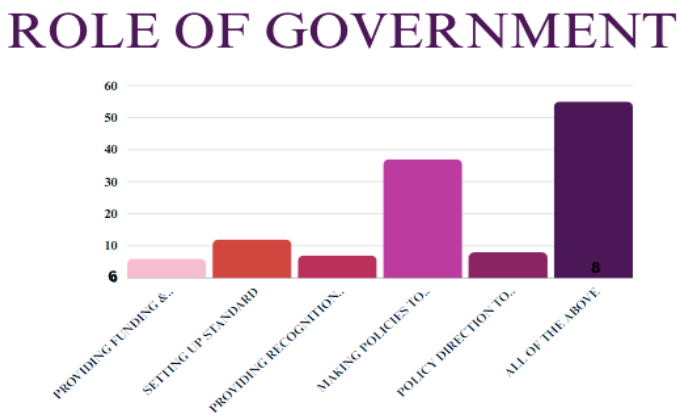


Figure 4.1.j Perception about role of Government

With respect to the perception of staff if they considered student committee as important for inclusion in WIL committees along with government & industry partners,

62% reported it is important yes & 32% reported may be.

Regarding the magnitude of role staff themselves should play in the design & implementation of programs, 59% reported Lead role taking responsibility for program design & implementation of WIL programs. 24% reported staff should play a supporting role along with industry partners, government & students. 8% reported that staff's role should be primarily teaching & research and hence they should play only minimal role. 9% were not sure about what kind of role teachers must play.

4.2 Discussion based on the staff's perception

The survey provides a comprehensive understanding of the university staff's perceptions regarding the landscape of Work Integrated Learning (WIL) programs. The responses shed light on various aspects, including familiarity, types of programs, staff roles, motivations, challenges, benefits, and the overall impact on student outcomes.

1. Level of Familiarity: The majority of faculty (84.2%) expressed a high level of familiarity with WIL programs, indicating a positive awareness among the staff.

2. Types of WIL Programs: Short-term programs, such as workshops and guest lectures, were more familiar to staff (72%) compared to long-term programs like internships and co-op programs (20%). This highlights a potential focus on shorter, more immediate engagements.

3. Staff Roles: The staff's roles in program implementation varied, with a majority providing input and feedback (58.3%). Understanding these roles is crucial for effective program design and implementation.

4. Motivations: The major motivation for staff involvement was a passion for student success (80%). This intrinsic motivation is a positive factor contributing to the commitment of staff in WIL programs.

5. Challenges and Limitations: Challenges include a lack of clear roles and responsibilities (34%), lack of time (25%), and insufficient resources (23%). Addressing these challenges is essential for optimizing staff engagement.

6. Impact on Student Learning Outcomes: A significant portion of the staff (51.9%) believes that their involvement has a significant impact on students' learning outcomes. This underscores the perceived importance of staff involvement in WIL programs.

7. Resources for Participation: Adequate training and professional development opportunities were deemed the most essential resource for effective staff participation (51%).

8. Satisfaction and Thriving of WIL Programs: The majority of respondents (72%) perceived that WIL programs in their institutions are inadequate, and an overwhelming 91% reported dissatisfaction. These findings indicate potential areas for improvement.

9. Importance of University-Industry Collaboration: Nearly all respondents (98.1%) consider university-industry collaboration critical for the success of WIL programs, emphasizing the importance of external partnerships.

10. Goals and Objectives of Collaboration: The primary goals of collaboration include providing students with real-world experience, increasing industry involvement in education, enhancing students' employability skills, and improving the overall curriculum.

11. Nature and Structure of Collaboration: The collaborative efforts predominantly involve short-term programs (76%) and a combination of on-campus and off-campus structures (57.7%).

12. Government and WIL Programs: A majority (76%) supports the idea that the government should play a significant role in establishing WIL programs, with suggested roles ranging from policy-making to funding and infrastructure aid.

13. Student Committees and Staff Roles: A significant percentage (59%) believes that staff should take a lead role in the design and implementation of WIL programs, emphasizing the importance of faculty leadership.

Conclusion and Recommendations:

The survey findings suggest both strengths and areas for improvement in the current landscape of WIL programs. Key recommendations include addressing challenges related to role clarity, time constraints, and resource availability. Investing in training and professional development opportunities for staff is crucial for enhancing their effectiveness in WIL program implementation. To improve satisfaction levels and the perceived success of WIL programs, institutions should consider incorporating long-term programs, providing clearer roles and responsibilities, and strengthening university-industry collaborations. Aligning goals and expectations between partners and improving communication can contribute to program success. Moreover, collaboration with the government for policy support and funding, along with the inclusion of student committees, can further enrich the WIL ecosystem. Regular evaluations and assessments should be conducted to ensure program quality, with a focus on continuous improvement.

Overall, the survey outcomes provide valuable insights for institutions aiming to enhance their WIL programs, aligning them more closely with the needs and expectations of both staff and students.

4.3 Analysis of research question two – Perception of Students on WIL

The students' awareness and understanding of WIL programs in AICTE-approved institutes, awareness, how do students perceive the benefits and challenges of participating in WIL, factors influence the students' participation in WIL programs & students' expectations and experiences were explored.

Exploring the level of familiarity of students with types of WIL programs, 80% reported that they are somewhat familiar, 15% were very familiar.

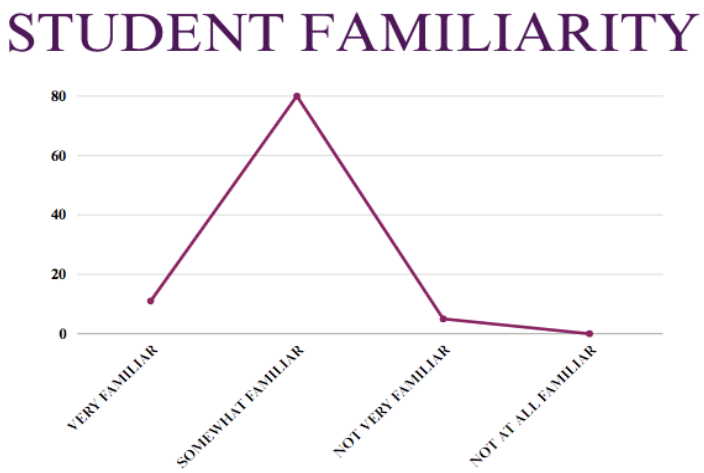


Figure 4.3.a Level of Familiarity of Students

The type of WIL 78 % responded they were familiar their institutes conducting, short term programs such as Workshops, Guest Lectures, Funding/Sponsorship for events, 20% were familiar with both long term programs (Internships, Co-op programs, job shadowing, Service-learning programs, Research projects) & short-term programs. With respected to WIL participation, 78% of students reported that they participated in the WIL programs

conducted by their college. About the perception of students with respect to current state of WIL programs in their institutes, 86% reported that its is Not well-established or utilized. With respect to how students perceive the benefits of WIL programs, 60.3% reported that career readiness in terms of personal development has improved. With respect to career readiness in terms of job opportunities 70% reported that there has been no improvement in terms of job opportunities. The level of student satisfaction, 90% reported they are not satisfied.

The significant barriers to students' participation in WIL programs, 68% reported as lack of available program among other reasons such as inadequate support and resources, difficulty balancing WIL responsibilities with academics.

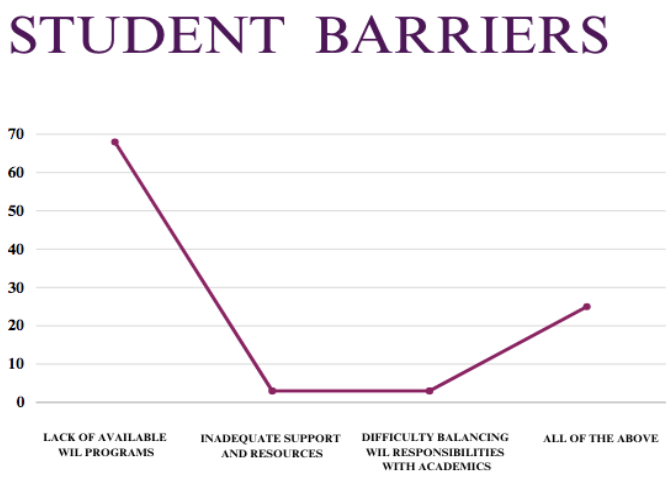


Figure 4.3.b Barriers to students participation

Throwing light on motivation behind students' participation in WIL programs, 88% reported all 3 factors hands-on experience, networking opportunities, improved chances of getting hired were significant motivating factors.

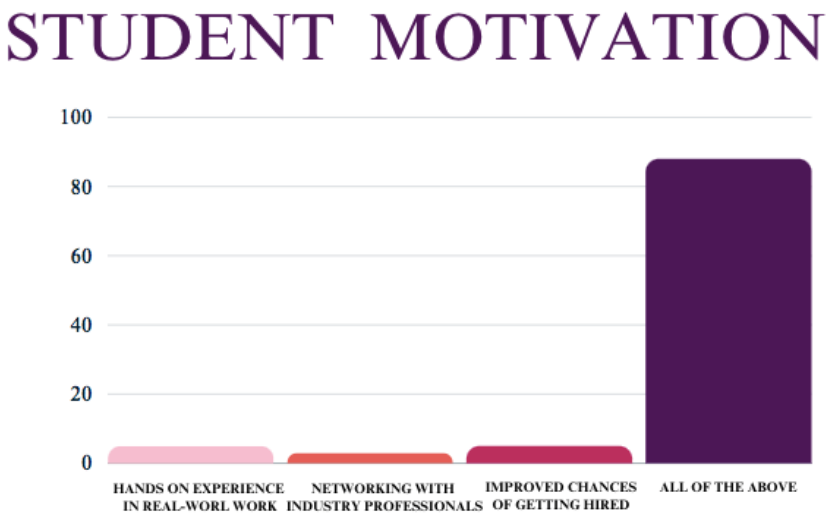


Figure 4.3.c Motivation behind WIL Participation

Regarding the type of WIL programs that students would be most interested to attend 75.6% reported that they would be interested to attend long term programs such as Internships, Co-op programs, job shadowing, Service-learning programs, Research projects.

About the need for establishing student committee for WIL program, 84.6% reported that it is essential to have a student committee for effective implementation of WIL programs. Regarding the interest of students to involve in student committee for WIL programs, 69.2 students reported that they would like to be involved in the students' committee for organizing & implementing the WIL programs.

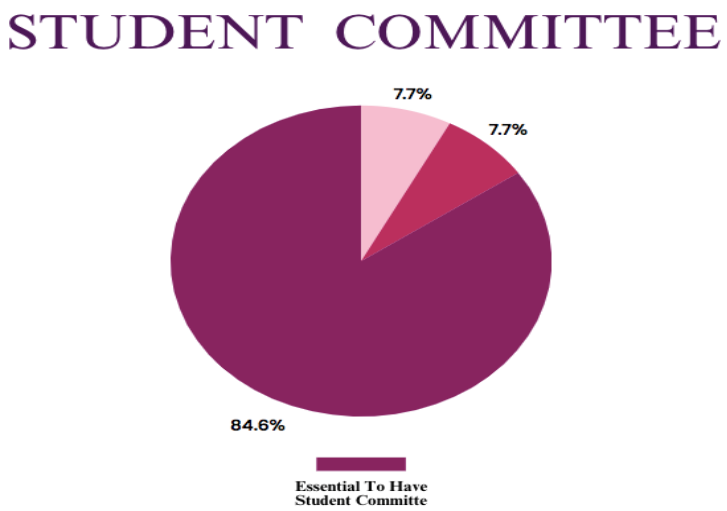


Figure 4.3.d Importance of Student Committee

With respect to if WIL programs must be made mandatory & integrated to the curriculum from the first to last year of bachelor's degree, 89% of the students reported that it is essential for the overall development of students.

About students' expectations from WIL programs, hands-on real-world experience relevance to their field of study, opportunities to network with industry professionals, Improved employability and career readiness, enhanced academic performance, Increased industry knowledge and skills & more chances of getting hired after graduation.

4.4 Discussion based on the student's perception

The survey results provide valuable insights into university students' perceptions of Work Integrated Learning (WIL) programs across AICTE-approved institutes. The discussion highlights key findings related to students' familiarity, participation, benefits, challenges, motivations, expectations, and suggestions for improving the current landscape of WIL.

1. Level of Familiarity: A significant proportion of students (80%) reported some level of familiarity with WIL programs, indicating a reasonable awareness among the student population.

2. Types of WIL Programs: The majority of students (78%) are familiar with short-term programs such as workshops and guest lectures. This highlights a preference for immediate and impactful engagements.

3. WIL Participation: Encouragingly, a considerable percentage (78%) of students reported active participation in WIL programs conducted by their colleges, showcasing a positive inclination towards practical experiences.

4. Perceived Benefits: Students predominantly perceive career readiness in terms of personal development (60.3%) as the major benefit of WIL programs. However, there is a notable perception (70%) that WIL has not significantly improved job opportunities.

5. Level of Satisfaction: The majority of students (90%) expressed dissatisfaction with the current state of WIL programs in their institutes, indicating a gap between expectations and reality.

6. Barriers to Participation: The significant barriers to participation include a perceived lack of available programs and financial constraints. Overcoming these barriers is crucial for fostering greater student engagement in WIL initiatives.

7. Motivations for Participation: Students are primarily motivated by hands-on experience, networking opportunities, and improved chances of getting hired. This indicates a strong desire for practical learning experiences that directly contribute to their career development.

8. Student Expectations: Students have clear expectations from WIL programs, emphasizing the importance of hands-on real-world experience, networking opportunities, improved employability, enhanced academic performance, increased industry knowledge, and more chances of getting hired.

9. Interest in Long-Term Programs: A significant majority (75.6%) expressed interest in long-term programs such as internships and research projects, suggesting a desire for more immersive and extended experiences.

10. Importance of Student Committees: The overwhelming consensus (84.6%) on the need for a student committee for the effective implementation of WIL programs highlights students' interest in actively contributing to the planning and execution of such initiatives.

11. Mandatory Integration with Curriculum: A large majority (89%) of students believe that WIL programs should be made mandatory and integrated into the curriculum throughout their bachelor's degree. This reflects a strong conviction that such programs are integral to holistic student development.

Conclusion and Recommendations:

While students show a commendable level of awareness and interest in Work Integrated Learning programs, there is a clear gap between expectations and the current state of WIL initiatives in their institutes. To bridge this gap and enhance the effectiveness of WIL programs, the following recommendations are proposed:

Diversify Program Offerings: Institutes should consider diversifying WIL program offerings, including both short-term and long-term options, to cater to the varied preferences of students.

Enhance Job Opportunities: Efforts should be made to address the perceived gap in job opportunities resulting from WIL programs, possibly through increased collaboration with industry partners and focused career development initiatives.

Overcome Barriers: Institutes should actively address barriers to participation, such as financial constraints, by exploring funding opportunities, scholarships, and industry partnerships to make WIL more accessible to a broader student population.

Improve Program Satisfaction: Regular assessments and feedback mechanisms should be implemented to identify areas for improvement and enhance overall program satisfaction among students.

Strengthen Student Involvement: Establishing and empowering student committees can contribute to the effective planning, implementation, and continuous improvement of WIL programs, ensuring they align with student expectations.

Curriculum Integration: Collaborative efforts should be made to integrate WIL programs seamlessly into the curriculum, providing students with continuous and structured exposure to real-world experiences from the beginning to the end of their bachelor's degree. By addressing these recommendations, institutes can create a more robust and responsive WIL ecosystem that aligns with the expectations and aspirations of their student population, ultimately contributing to a more comprehensive and impactful educational experience.

4.5 Analysis of research question three – Existing Landscape & Model of WIL

In order to suggest a model for WIL that universities can adopt for improving WIL, its imperative to derive the existing landscape of a possible model based on the analysing the answers to the above questions.

The survey results offer a comprehensive view of Work Integrated Learning (WIL) programs, capturing both staff and student perspectives within AICTE-approved institutes. The analysis reveals notable insights into familiarity, program types, participation levels, perceived benefits, challenges, motivations, and recommendations for enhancing the current WIL landscape.

1. Level of Familiarity:

Staff: A majority of staff (84.2%) expressed high familiarity with WIL programs, demonstrating a positive awareness among university faculty.

Students: About 80% of students reported some level of familiarity, indicating a reasonable awareness among the student population.

In conclusion, the analysis of the survey data on the level of familiarity with Work Integrated Learning (WIL) programs among university staff and students reveals a positive awareness within both academic cohorts. This shared awareness lays a promising foundation for the successful implementation and integration of WIL programs, emphasizing the potential for effective collaboration between staff and students in fostering enriched educational experiences.

2. Types of WIL Programs:

Staff: Short-term programs like workshops and guest lectures (72%) are more familiar to staff compared to long-term programs, suggesting a potential focus on immediate engagements. Students: The majority of students (78%) are familiar with short-term programs, showcasing a preference for impactful and immediate experiences.

In conclusion, the examination of the survey results regarding the types of Work Integrated Learning (WIL) programs demonstrates distinct preferences and orientations among university staff and students. The data indicates that short-term programs, such as workshops and guest lectures, are more familiar to both staff and students, expressing awareness of these immediate engagement opportunities. This suggests a prevailing awareness towards, short-term initiatives, it also underscores the potential for institutions to explore and enhance the visibility of long-term programs to cater to a more diversified range of preferences. A nuanced understanding of these preferences is critical for designing WIL programs that resonate closely with the expectations and aspirations of both staff and students.

3. WIL Participation:

Staff: Encouragingly, 78% of students reported active participation in WIL programs, highlighting a positive inclination towards practical experiences.

Students: Similarly, 78% of students reported active participation, indicating a shared enthusiasm for engaging in real-world experiences.

In conclusion, the parallel enthusiasm expressed by both university staff and students, with each group actively participating in Work Integrated Learning (WIL) programs, underscores a positive inclination towards practical experiences. This alignment recommends a shared commitment to fostering real-world engagement and to bridge the gap between academic learning and practical application. The encouraging level of involvement from both staff and students lays a foundation for collaborative efforts to further enhance and optimize the impact of WIL initiatives within the academic environment. This shared enthusiasm also emphasizes the importance of sustaining and expanding such programs to ensure a holistic and experiential learning journey for students while recognizing the dedication of university staff in facilitating these valuable opportunities.

4. Perceived Benefits:

Staff: The major motivation for staff involvement is a passion for student success (80%).

Students: Students primarily perceive career readiness in terms of personal development (60.3%) as the major benefit, with 70% expressing that WIL has not significantly improved job opportunities.

In summary, a nuanced understanding of the perceived benefits of Work Integrated Learning (WIL) programs emerges when comparing the perspectives of university staff and students. For staff, the predominant motivation centers around a genuine passion for fostering student success, reflecting a commitment to the educational and professional development of the student body. On the other hand, students primarily view WIL as a conduit for personal development contributing to career readiness, emphasizing the acquisition of skills and experiences beyond traditional academic realms. The notable observation that majority of students feel WIL has not markedly improved job opportunities indicates a potential misalignment in expectations and outcomes. This discrepancy signals an opportunity for collaborative efforts to refine program structures, ensuring that WIL experiences align more closely with students' career aspirations and enhance their overall employability.

5. Level of Satisfaction:

Staff: The majority of staff (72%) perceives WIL programs in their institutions as inadequate, with 91% expressing dissatisfaction.

Students: A staggering 90% of students expressed dissatisfaction, indicating a misalignment between expectations and the current state of WIL programs.

In conclusion, an overarching sentiment of dissatisfaction emerges when examining the perceived effectiveness of Work Integrated Learning (WIL) programs from both staff and student viewpoints. The majority of staff members express concerns about the adequacy of current WIL initiatives within their institutions, with an overwhelming reporting dissatisfaction. Simultaneously, a substantial number of students convey discontent,

reflecting a significant misalignment between their expectations and the prevailing state of WIL programs. This collective dissatisfaction underscores the imperative for collaborative initiatives aimed at enhancing program quality, addressing identified shortcomings, and fostering an environment where WIL experiences more closely align with the expectations and aspirations of both university staff and students.

6. Barriers to Participation:

Staff: Challenges include a lack of clear roles and responsibilities (34%), lack of time (25%), and insufficient resources (23%).

Students: Significant barriers for students include a perceived lack of available programs and financial constraints.

In summary, both university staff and students acknowledge the existence of barriers that impede effective participation in Work Integrated Learning (WIL) programs. Staff members highlight challenges such as unclear roles and responsibilities, time constraints, and insufficient resources, which pose organizational hurdles to the successful implementation of WIL initiatives. Conversely, students face barriers predominantly associated with program availability and financial constraints. Recognizing these barriers is crucial for institutions aiming to enhance the accessibility and inclusivity of WIL programs, ensuring that organizational and financial considerations are addressed to facilitate greater student engagement and participation in practical, real-world learning experiences.

7. Motivations for Participation:

Staff: The major motivation for staff is a passion for student success (80%).

Students: Students are primarily motivated by hands-on experience, networking opportunities, and improved chances of getting hired.

In conclusion, both university staff and students exhibit distinct yet interconnected motivations for active participation in Work Integrated Learning (WIL) programs. While staff members are predominantly motivated by a passion for fostering student success, students are driven by the prospect of gaining hands-on experience, networking opportunities, and enhanced employability prospects. This symbiotic relationship in motivations underscores the collaborative nature of WIL initiatives, emphasizing the importance of aligning the goals and aspirations of both staff and students to create a mutually beneficial and enriching learning environment.

8. Interest in Long Term Programs

Staff: While the majority (72%) of staff is familiar with short-term programs, they do acknowledge that long-term programs becomes crucial for WIL program success.

Students: A significant majority (75.6%) of students express a keen interest in long-term programs, such as internships, research projects, and service-learning programs. This inclination indicates a strong desire for more immersive and extended experiences that go beyond short-term engagements.

In conclusion balancing short-term and long-term program options can improve overall impact of Work Integrated Learning (WIL) programs. By incorporating more extended experiences, institutions can provide students with opportunities for in-depth learning, skill development, and a deeper integration of academic knowledge with practical application.

This aligns with the shared goal of creating a WIL ecosystem that caters to the diverse preferences and aspirations of both students and staff.

9. Students Committees

Staff: Staff members acknowledge (59%) the significance of student committees, with a notable majority supporting the idea that staff should take a lead role in the designing/implementation of WIL programs. This shared belief reflects an understanding of the valuable contributions that student involvement can bring to the planning and execution processes.

Students: A significant (84.6%) consensus among students underscores the essential role of student committees in the successful implementation of Work Integrated Learning (WIL) programs. Students recognize the importance of having a dedicated committee for organizing and executing WIL initiatives, emphasizing their commitment to active participation in shaping the programs.

In conclusion, The alignment between staff and student perspectives on the importance of student committees signals a shared commitment to fostering collaboration and shared decision-making in WIL programs. Establishing and empowering student committees can contribute to a more inclusive and effective WIL ecosystem, where both staff and students play integral roles in shaping and enhancing the overall experience. This collaborative approach guarantees that programs are designed to meet the needs and expectations of the entire university community.

10. Curriculum Integration:

Staff: Staff members recognize the significance of curriculum integration, with a majority (76%) supporting the idea that the government should play a significant role in establishing WIL programs. This acknowledgment aligns with students' perspectives and emphasizes the importance of institutional and governmental support for seamlessly integrating WIL experiences into the academic curriculum.

Students: A substantial majority (89%) of students express a strong belief in the integration of Work Integrated Learning (WIL) programs into the curriculum throughout their bachelor's degree. This reflects a shared understanding among students about the integral role of WIL experiences in their overall academic and professional development.

In conclusion, the convergence of staff and student perspectives on curriculum integration highlights a shared commitment to the holistic development of students. Integrating WIL programs into the curriculum ensures a structured and continuous exposure to real-world experiences, aligning with both academic and professional goals. This collaborative approach strengthens the foundation for effective program implementation, fostering an environment where students can seamlessly integrate theoretical knowledge with practical, hands-on experiences.

11. Student Expectations:

Staff: Staff recognizes the need for diversifying program offerings, enhancing job opportunities, overcoming barriers, improving program satisfaction, and strengthening student involvement.

Students: Students emphasize the importance of hands-on real-world experience, networking opportunities, improved employability, enhanced academic performance, increased industry knowledge, and more chances of getting hired.

In summary, the comparison of staff and student perspectives on Work Integrated Learning (WIL) program expectations reveals a nuanced landscape. Staff members acknowledge the organizational challenges and emphasize the need for program diversification, overcoming barriers, and enhancing overall satisfaction. In contrast, students places a throrough emphasis on the content and outcomes of WIL experiences, underscoring the significance of real-world exposure, networking opportunities, and improved employability. The synthesis of these perspectives suggests that a holistic approach, addressing both organizational and experiential aspects, is vital for the successful design/implementation of WIL programs that cater to the diverse needs of both staff and students.

12. Recommendations:

Staff: Recommendations include addressing challenges related to role clarity, time constraints, and resource availability. There's a focus on incorporating long-term programs, providing clearer roles and responsibilities, and strengthening university-industry collaborations.

Students: Students advocate for making WIL programs mandatory and integrating them into the curriculum, indicating a strong belief in the integral role of WIL in holistic student development.

In conclusion, the recommendations put forth by both staff and students converge on the necessity for substantial improvements in the design and execution of Work Integrated

Learning (WIL) programs. Staff recommendations primarily target organizational challenges, urging the clarification of roles, efficient time management, and enhanced resource allocation. Simultaneously, students emphasize the integration of WIL into the academic curriculum and the establishment of mandatory participation, reflecting a shared conviction in the pivotal role of WIL experiences for comprehensive student development. The alignment of these recommendations underscores the importance of collaborative efforts between academic institutions, faculty, and students to institute meaningful enhancements in the WIL landscape.

4.6 Discussion on existing landscape of WIL

By comparing staff and student perceptions, it's evident that while there is alignment in certain areas, such as enthusiasm for participation, there are significant disparities in satisfaction levels and perceived program effectiveness. Both staff and students emphasize the need for improvements, with staff focusing on organizational challenges and students on program content and job opportunities. The combined insights underscore the importance of a collaborative approach, involving both staff and students in decision-making processes to enhance the overall effectiveness and satisfaction levels of WIL programs. Bridging the identified gaps, addressing challenges, and aligning program offerings with student expectations are key considerations for institutions aiming to create a robust and responsive WIL ecosystem. Regular evaluations, continuous improvement efforts, and strengthened partnerships with industry and government entities can contribute to a more impactful and holistic WIL experience.

Summary of Existing landscape of WIL

Aspect	Staff Perspective	Student Perspective	Conclusion
1. Level of Familiarity	84.2% expressed high familiarity	80% reported some familiarity	Positive awareness exists among both staff and students, forming a promising foundation for successful WIL program implementation and collaboration.
2. Types of WIL Programs	72% familiar with short-term programs	78% familiar with short-term programs	Both groups are more familiar with short-term programs, indicating potential for exploring and enhancing long-term program visibility
3. WIL	78% reported active	78% reported	Shared enthusiasm for practical

Participation	participation	active participation	experiences, demonstrating a positive inclination to bridge gap between academic learning and real-world application
4. Perceived Benefits	Major motivation: 80% for student success	Primarily career readiness, 60.3% personal dev.	Misalignment in expectations and outcomes, signalling opportunities for collaborative efforts to refine program structures.
5. Level of Satisfaction	72% perceives programs as inadequate, 91% dissatisfied.	90% expressed dissatisfaction	Collective dissatisfaction indicates a need for collaborative initiatives to enhance program quality and alignment with expectations.
6. Barriers to Participation	Challenges: lack of clear roles, time constraints	Barriers: lack of available programs, finances	Recognizing these barriers is crucial for enhancing accessibility and inclusivity of WIL programs.
7. Motivations for Participation	Major motivation: 80% for student success	Primarily hands-on exp., networking, employability	Symbiotic relationship in motivations emphasizes the collaborative nature of WIL initiatives.
8. Interest in Long Term Programs	Acknowledges importance of long-term programs	75.6% express interest in long-term programs	Balancing short-term and long-term options can enhance overall appeal and effectiveness of WIL programs.

9. Students Committees	Acknowledges the significance of student comm.	84.6% consensus on essential role of student comm.	Establishing and empowering student committees contributes to a more inclusive and effective WIL ecosystem
10. Curriculum Integration	76% support government playing a significant role	89% express strong belief in curriculum integration	Collaborative commitment to holistic student development through structured exposure to real-world experiences.
11. Student Expectations	Recognizes the need for diversification, etc.	Emphasize hands-on exp., networking, employability	Holistic approach is vital for designing and implementing WIL programs catering to diverse needs.
12. Recommendations	Address challenges, incorporate long-term programs	Advocate for mandatory integration into curriculum	Collaborative efforts between staff and students are necessary for substantial improvements in WIL programs.

Table 1 Summary of Existing Landscape of WIL

4.7 Characteristics of an Ideal Model of WIL

Based on the detailed descriptive data analysis and the existing landscape of Work Integrated Learning (WIL) programs from the university staff's perspective, an ideal model can be derived, considering key aspects:

Level of Familiarity: Ideal Model: Institutions should aim to maintain and enhance the high level of familiarity among university staff. Continuous professional development programs, workshops, and information sessions can be organized to keep staff up to date on the latest trends and opportunities in WIL programs.

Type of WIL Programs: Ideal Model: Institutions should strive for a balanced exposure to both short-term and long-term WIL programs. While short-term programs like workshops and guest lectures are popular, efforts should be made to increase awareness and participation in long-term programs, such as internships and research projects. This can be achieved through targeted communication and promotion.

Role of University Staff: Ideal Model: A collaborative approach should be encouraged, where university staff plays various roles. While providing input and feedback is crucial, institutions should also identify opportunities for staff to become key decision-makers. Staff involvement should be recognized and valued, fostering a sense of ownership in WIL program implementation.

Motivations for Involvement: Ideal Model: The passion for student success should remain a primary motivation for staff involvement. However, institutions can explore additional avenues to motivate staff, such as providing opportunities to work with industry partners and offering career advancement prospects. Recognizing and rewarding staff contributions can further enhance motivation.

Factors Influencing Involvement: Ideal Model: Efforts should be directed towards addressing key factors influencing staff involvement. Clear role definitions and responsibilities, effective time management strategies, and resource allocation should be

prioritized. This could involve regular training sessions, improved communication channels, and resource optimization.

Impact on Student Learning Outcomes: Ideal Model: Institutions should work towards reinforcing the belief among staff that their involvement significantly impacts students' learning outcomes. Clear communication of success stories and testimonials can help showcase the tangible benefits of staff engagement. This reinforces a sense of purpose and encourages continued active participation.

Resources for University Staff: Ideal Model: Institutions should prioritize providing adequate training and professional development opportunities as the primary resource for university staff. This can include regular workshops, seminars, and certification programs to keep staff up to date on the latest industry trends/best practices in WIL. Additionally, efforts should be made to secure robust support from industry partners and allocate sufficient funding to ensure effective participation in program design/implementation.

Perception of WIL Programs in the College/University: Ideal Model: Institutions should strive for an improved perception of WIL programs among university staff. Efforts should be directed towards addressing the identified inadequacies and challenges, focusing on enhancing program visibility, effectiveness, and overall impact. Regular feedback loops and continuous improvement strategies can contribute to a more positive perception among staff.

Satisfaction Level: Ideal Model: The dissatisfaction among university staff suggests a need for substantial improvements. Institutions should conduct thorough assessments to identify specific areas causing dissatisfaction and implement targeted interventions. Addressing

issues related to program design, resource allocation, and staff involvement can significantly enhance overall satisfaction levels.

Opinion on University-Industry Collaboration: Ideal Model: The overwhelming consensus on the critical role of university-industry collaboration underscores the importance of fostering and strengthening these partnerships. Institutions should actively facilitate collaborations with industry partners, establishing clear communication channels, and creating frameworks for mutual benefit. Promoting collaborative initiatives will contribute to the overall success of WIL programs.

Supporting Career Development of Students through Collaboration: Ideal Model: Recognizing the potential benefits, institutions should focus on leveraging university-industry collaboration to support the career development of students. Efforts should be directed towards increasing job opportunities, enhancing curriculum relevance, providing hands-on experiences, and securing additional resources and support from industry partners. Creating structured mechanisms for collaboration and showcasing success stories can further reinforce the value of these partnerships.

Factors in University-Industry Collaboration: Ideal Model: Institutions should prioritize improving the alignment of goals and expectations between partners, enhancing communication and relationship-building, and adhering to government specifications and regulations. Recognizing the importance of involving students in the collaboration process is crucial. The ideal model involves a holistic approach that integrates all these factors to establish robust and mutually beneficial partnerships.

Understanding the Nature of Collaboration: Ideal Model: Institutions should conduct a holistic assessment of the nature of collaboration. This must includes clearly defining collaboration goals and objectives, determining the duration and frequency of collaboration activities, and identifying the number of industry partners involved. The ideal model encompasses diverse program options such as funding, infrastructure development, internships, projects, guest lectures, and curriculum tie-ups, ensuring a broad spectrum of opportunities for both students and industry partners.

Overall Goals and Objectives of Collaboration: Ideal Model: Institutions should focus on providing students with real-world experiences, increasing industry involvement in education, enhancing employability skills, improving curriculum design, fostering work readiness and real-world experience, creating more job opportunities to enhance the overall reputation of the college/university. Number of Partners: Frequency of Collaboration: Program Duration: Ideal Model: Institutions should aim to establishing 3-5 short term & long-term partners. Institutions should consider a flexible approach to collaboration frequency with more frequent collaborations, for manageable yet varied collaboration, providing students with exposure to different industry contexts. Institutions should also explore varied durations to align with specific program goals. Clarity on program durations is essential for effective planning and expectations.

General Benefits Observed: Ideal Model: Institutions should focus on enhancing career readiness in terms of professional & personal development , addressing networking and mentoring, soft skills development, industry insights, and innovation and entrepreneurial

skills. The ideal model aligns collaboration outcomes with comprehensive student development, bridging the gap between theoretical learning and industry expectations.

Challenges Faced: Ideal Model: Recognizing and addressing challenges is crucial for successful collaboration. Institutions should actively work on overcoming cultural differences, improving the ease of securing industrial partners, seeking government support, and ensuring adequate resources. Special attention should be given to addressing the challenge of securing industrial partners, acknowledging its significance in effective collaboration.

Challenges for Staff Involvement: Ideal Model: Establish clear guidelines for staff roles and responsibilities in WIL program design and implementation. Provide comprehensive training to address the "Lack of clear role and responsibilities". Allocate sufficient resources and administrative support to overcome challenges related to program structure.

Measures for Quality and Effectiveness: Ideal Model: Implement a robust evaluation system for WIL programs, addressing the need for comprehensive assessments. Regularly collect feedback from industry partners and students to adapt programs to evolving needs. Monitor student performance and maintain open communication with industry partners. Conduct regular annual evaluations for continuous improvement.

Structure of WIL Programs: Ideal Model: Adopt a balanced approach with a combination of on-campus and off-campus structures. Tailor the program structure based on specific objectives, recognizing that different structures suit various program types. Customize structures to meet the unique needs of industry partners for effective collaboration.

Mandatory vs. Optional Programs: Ideal Model: Consider making WIL mandatory, as suggested by majority of staff and ensuring widespread participation and benefit. Tailor program structures to accommodate mandatory programs with optional elements, optimizing opportunities for all students.

Steps to Improve WIL Programs: Ideal Model: Prioritize the establishment of more industry partnerships to broaden collaborative opportunities. Focus on improving program design and implementation through strategic planning and refinement. Implement a structured approach to expanding industry collaborations while meeting the evolving needs of students and industry partners.

Impact of Organizational Structure: Ideal Model: Acknowledge the impact of organizational structure. Leverage positive impacts and address any negative impacts. Continuously assess and adapt the organizational structure to optimize WIL programs, ensuring alignment with evolving educational and industry needs.

Primary Role of Industry Partners: Ideal Model: Recognize industry partners' primary role in both providing job opportunities and contributing industry expertise and knowledge. Balance these roles to enrich the learning experience for students, fostering a comprehensive understanding of both the practical and theoretical aspects of their field.

Inclusion of Student Committees: Ideal Model: Emphasize the importance of including student committees in WIL programs, as perceived by majority of staff. Actively involve students in decision-making processes, allowing them to contribute to the design and implementation of WIL initiatives. Encourage collaboration between students, government, industry partners, and university staff for a holistic and inclusive approach.

Magnitude of Staff Role: Ideal Model: Advocate for staff to take a lead role in the design and implementation of WIL programs, aligning with the perspective of staff. Position staff members as key decision-makers and contributors to program design, leveraging their expertise. Promote a collaborative model where staff work alongside industry partners, government entities, and students, recognizing the multifaceted contributions that each group brings. Encourage a shift away from the notion that staff should primarily focus on teaching and research, emphasizing the integral role they play in shaping practical, real-world learning experiences.

Government's Role in Establishing WIL: Ideal Model: Acknowledge the government's significant role and advocate for active involvement. Implement policies making WIL mandatory and provide funding and infrastructure support. Set up assessment mechanisms and standards to monitor the impact of WIL programs. Foster collaboration between universities and industries through government-driven initiatives.

Based on the detailed descriptive data analysis and the existing landscape of Work Integrated Learning (WIL) programs from the university staff's perspective, an ideal model can be derived, considering key aspects:

Level of Familiarity: Ideal Model: Implement awareness campaigns, workshops, and information sessions to enhance familiarity. Regularly update students on the types and benefits of WIL programs.

Type of WIL Programs: Ideal Model: Promote long-term programs (Internships, Co-op programs, job shadowing, Service-learning programs, Research projects) for a

comprehensive learning experience along with existing short-term (Workshops, Guest Lectures, Funding/Sponsorship).

WIL Participation: Ideal Model: Encourage and facilitate widespread participation by creating diverse and engaging WIL opportunities.

Perceived Benefits: Ideal Model: Strengthen programs to enhance career readiness and communicate the benefits effectively. Address aspects like job opportunities to align expectations with outcomes.

Student Satisfaction: Ideal Model: Conduct regular satisfaction surveys, gather feedback, and implement improvements in program design and delivery.

Perception of WIL Programs: Ideal Model: Establish a robust and well-utilized WIL framework by addressing identified inadequacies and enhancing program visibility and impact.

Barriers to Participation: Ideal Model: Address barriers by expanding program offerings, providing financial aid, and ensuring comprehensive support services.

Motivations for Participation: Ideal Model: Leverage these motivations in program design, highlighting hands-on experiences, networking opportunities, and improved employability.

Preferred Program Types: Ideal Model: Align program offerings with student preferences, emphasizing long-term programs for in-depth experiences.

Student Committee for WIL: Ideal Model: Establish and involve a student committee for effective planning, implementation, and continuous improvement of WIL programs.

Mandatory Integration into Curriculum: Ideal Model: Advocate for the integration of mandatory WIL programs into the curriculum, emphasizing its importance for overall student development.

Interest in Student Committee Involvement: Ideal Model: Encourage and facilitate active student involvement in committees for organizing and implementing WIL programs.

Expectations from WIL Programs: Ideal Model: Design programs to meet expectations of Hands-on real-world experience, networking, improved employability, enhanced academic performance, increased industry knowledge and skills, and more chances of getting hired after graduation, ensuring relevance to students' fields of study and providing holistic development opportunities.

In summary, the ideal model emphasizes a balanced mix of short-term and long-term programs, a varied number of partners, flexible collaboration frequencies, diverse program durations, and a focus on comprehensive student development. Addressing challenges and leveraging the observed benefits contribute to creating a dynamic and impactful university-industry collaboration model. Regular assessments and adaptations based on collaboration outcomes are essential for continuous improvement and alignment with evolving educational and industry needs. The ideal model emphasizes adaptability, collaboration, and continuous improvement. Clear communication, flexible program structures, and strategic partnerships are vital elements, along with active government support to create a standardized and supportive environment for WIL programs. Regular assessments and adaptations based on collaboration outcomes ensure alignment with the evolving needs of

both students and industry partners. The ideal model encourages a collaborative and inclusive approach to WIL program development.

The ideal model revolves around maintaining a high level of familiarity, promoting a balanced exposure to different program types, recognizing and expanding staff roles, diversifying motivations for involvement, addressing key influencing factors, and reinforcing the positive impact on student learning outcomes. A holistic and strategic approach will contribute to an effective and sustainable WIL ecosystem within academic institutions. The ideal model involves a strategic and comprehensive approach to address identified challenges, prioritize resources for staff development, enhance program perceptions, and leverage strong university-industry collaborations to maximize career development opportunities for students. Continuous evaluation and adaptation based on feedback will be essential for ensuring the sustained success and effectiveness of WIL programs.

The ideal model for university-industry collaboration involves a strategic alignment of goals, effective communication, compliance with regulations, active involvement of students, and a comprehensive understanding of the collaborative nature. By focusing on these aspects, institutions can create a robust and dynamic collaboration framework that not only meets the needs of both partners but also contributes significantly to the holistic development and employability of students. Continuous assessment and adaptation based on collaborative outcomes will be crucial for ensuring the sustained success of WIL programs. The ideal model emphasizes enhancing awareness, program variety, participation, satisfaction, and aligning WIL programs with students' expectations and

motivations. Regular assessments and adaptations based on feedback will be crucial for ensuring sustained success and effectiveness. It recognizes the significance of student committees and highlights the importance of staff taking a lead role in program design and implementation. This model aims to foster a dynamic partnership between staff, students, industry, and government, ensuring a well-rounded and impactful WIL experience for all stakeholders.

Summary of Characteristics of an Ideal Model

Aspect	Ideal Model
Level of Familiarity	Institutions should maintain and enhance a high level of familiarity among university staff & students by conducting continuous professional development programs, workshops, and information sessions to keep updated on the latest trends and opportunities. Implement awareness campaigns, workshops, and information sessions regularly on the types and benefits of WIL programs.
Type of WIL Programs	Increase awareness and participation in long-term programs to promote long-term programs (Internships, Co-op programs, job shadowing, Service-learning programs, Research projects) for a comprehensive learning experience along with existing short-term (Workshops, Guest Lectures, Funding/Sponsorship) for a balanced exposure to both short-

	term and long-term WIL programs.
Role of University Staff	Identify opportunities for staff to become key decision-makers. Recognize and value staff involvement, fostering a sense of ownership in WIL program implementation playing a lead role and to encourage a collaborative approach.
Motivations for Involvement	Maintain the passion for student success as a primary motivation. Explore additional avenues to motivate staff, such as providing opportunities to work with industry partners and offering career advancement prospects. Recognize and reward staff contributions to enhance motivation. Induce motivation for students by, highlighting hands-on experiences, networking opportunities, and improved employability.
Factors Influencing Involvement	Direct efforts towards addressing key factors, such as clear role definitions, effective time management strategies, and resource allocation. Prioritize regular training sessions, improved communication channels, and resource optimization.
Impact on Student Learning Outcomes	Reinforce the belief among staff that their involvement significantly impacts students' learning outcomes. Communicate success stories and testimonials to showcase the tangible benefits of staff engagement.
Resources for University Staff	Prioritize providing adequate training and professional

	development opportunities. Include regular workshops, seminars, and certification programs to keep staff updated on industry trends. Secure robust support from industry partners and allocate sufficient funding for effective program design and implementation.
WIL Participation	Strive for continuous improvement addressing identified inadequacies and challenges. Focus on enhancing program visibility, effectiveness, and overall impact by implementing regular feedback loops. Encourage and facilitate widespread participation by creating diverse and engaging career readiness programs and communicate the benefits effectively.
Student Satisfaction	Strengthen programs to address aspects like job opportunities to align expectations with outcomes. Conduct regular satisfaction surveys, gather feedback, and implement improvements in program design and delivery.
Barriers to Participation	Address barriers by expanding program offerings, providing financial aid, and ensuring comprehensive support services.
Preferred Program Types	Align program offerings with student preferences, emphasizing long-term programs for in-depth experiences.

Student Committee for WIL	Establish and involve a student committee for effective planning, implementation, and continuous improvement of WIL programs.
Mandatory Integration into Curriculum	Advocate for the integration of mandatory WIL programs into the curriculum, emphasizing its importance for overall student development.
Interest in Student Committee Involvement	Encourage and facilitate active student involvement in committees for organizing and implementing WIL programs.
Expectations from WIL Programs	Design programs to meet expectations of hands-on real-world experience, networking, improved employability, enhanced academic performance, increased industry knowledge and skills, and more chances of getting hired after graduation. Ensure relevance to students' fields of study and provide holistic development opportunities.

Table 2 Summary Characteristics of an ideal Model of WIL

4.8 Deriving WIL model from the above analysis & discussions

Drawing insights from the analysis of existing WIL practices, it becomes evident that a cohesive approach, integrating the resources and expertise of these three key entities, holds immense potential to address the challenges faced by graduates in transitioning from academia to the workforce. Hence, the concept of the UIG-WIL (University-Industry-Government Work Integrated Learning) model emerges as a transformative paradigm,

poised to revolutionize the education-to-employment journey for students by fostering holistic skill development, industry alignment, and sustainable economic growth.

Strengths of UIG (University-Industry-Government)

In light the existing landscape of Work Integrated Learning (WIL) and the increasing demand for skilled graduates in today's dynamic job market, there arises a pressing need to formulate a collaborative framework that harnesses the collective strengths of universities, government bodies, and industry stakeholders. In order to create a collaborative UIG (University, Industry, Government) WIL model, it becomes pertinent to analyse the strengths of the UIG.

University Strengths:

Curriculum Enhancement: Continuously update and enhance the curriculum to meet industry needs.

Mentorship Programs: Facilitate mentorship programs connecting students with industry professionals.

Infrastructure Development: Invest in state-of-the-art facilities and labs to support practical learning.

Global Collaboration: Foster international partnerships to provide students with a global perspective.

Soft Skills Training: Offer programs to enhance students' soft skills, including communication and teamwork.

Career Counselling: Provide guidance on career paths, industry trends, and skill development.

Human Capital (Students & Staff): Provide a pool of talented and skilled students for WIL programs. Engage faculty and staff in the design and implementation of WIL initiatives, ensuring their active involvement and support.

Time Period (3 Years): Structured Learning: Develop a phased WIL model integrated into the existing curriculum over the three-year period.

Progressive Skill Development: Implement a progression of skills development aligned with the academic calendar.

Infrastructure: State-of-the-Art Facilities: Invest in modern laboratories, technology, and equipment relevant to the industry.

Collaboration Spaces: Create dedicated spaces for collaboration between students, faculty, and industry partners.

Pedagogy & Instructional Design: Experiential Learning Modules: Integrate hands-on learning experiences into the curriculum. Industry-Relevant Content: Develop instructional content aligned with the current needs and trends of the industry.

Industry Strengths:

Networking Opportunities: Facilitate networking events, conferences, and forums for students to connect with industry professionals.

Sponsorship and Scholarships: Provide financial support through sponsorships and scholarships for students participating in WIL.

Real-world Projects: Offer industry-specific projects for students to work on, contributing to real-world problem-solving.

Collaborative Research: Engage in joint research initiatives with universities to advance knowledge and innovation.

Corporate Training Programs: Extend training programs to university students to enhance their industry-specific skills.

Feedback Mechanisms: Provide constructive feedback to universities on the performance and preparedness of students.

Innovation & R&D: Research Collaborations: Engage in collaborative research projects with universities to drive innovation through research & development. Technology Integration: Introduce new technologies & methodologies through R&D efforts.

Technology Transfer: Knowledge Sharing: Facilitate the transfer of industry knowledge and best practices to students. Access to Technology: Provide access to cutting-edge technologies used in the industry.

Consultancy: Industry Experts: Offer expertise through guest lectures, workshops, and consultancy services. Problem-Solving Support: Engage in collaborative problem-solving and consultancy projects.

Product/service Commercialization: provide entrepreneurial support by encouraging students to develop and commercialize innovative products. Incubation Programs: Provide resources and support for the development and launch of student-led products.

Work Placement: Internship Opportunities: Offer structured internships and work placements for students. Skill Development Programs: Facilitate training programs to enhance the employability of students entering the workforce. These contributions collectively build a synergistic relationship between universities, government bodies, and

industry partners, fostering an environment conducive to effective Work Integrated Learning.

Government Strengths:

Regulatory Support: Establish and enforce regulations that encourage industry collaboration in education.

Tax Incentives: Provide tax incentives for industries collaborating with universities on WIL initiatives.

Research Funding: Allocate funds for collaborative research projects between universities and industries.

Quality Assurance: Implement mechanisms to ensure the quality and relevance of WIL programs.

Accessibility Initiatives: Develop policies to make WIL opportunities accessible to a diverse student population.

National Skills Frameworks: Create frameworks that align WIL programs with national skills development goals.

Policy Alignment: Legislation Support: Enact policies and legislation that encourage collaboration between academia and industry.

Regulatory Frameworks: Establish frameworks that define the structure and guidelines for WIL programs. Establish Frameworks: National Skills Frameworks: Create frameworks outlining the skills required in various industries, aligning education with workforce needs.

Quality Assurance: Develop standards to ensure the quality and effectiveness of WIL programs. Fund Programs: Financial Support: Allocate funds to universities for the development and implementation of WIL initiatives. Scholarships and Grants: Provide financial assistance to students participating in WIL programs.

Monitoring & Evaluations: Assessment Mechanisms: Implement systems to assess the impact and success of WIL programs. Continuous Improvement: Regularly evaluate and adjust programs based on feedback and changing industry demands.

Rewards & Recognition: Incentives for Collaboration: Offer incentives for universities and industries collaborating on successful WIL programs. Recognition Programs: Acknowledge and reward outstanding contributions to WIL from both academic and industry partners.

These elements of strengths of UIG collectively can contribute to creating a robust ecosystem for WIL ensuring that students receive a well-rounded education that aligns with industry needs and societal demands.

Key steps for Integrating strengths of UIG To Revolutionizing WIL

This collaborative approach, integrating the strengths of Universities, Industry, Government, Students, and Staff, has the potential to revolutionize Work Integrated Learning aims to bridge the gap between academia and industry, ensuring that graduates are not only knowledgeable but also prepared for the demands of the industry.

1. Coordinated Planning:

Establish a joint committee comprising representatives from U, I, and G.

Plan a comprehensive roadmap for WIL integration in academic programs.

2. Curriculum Alignment:

Collaboratively design curriculum modules that align with industry needs.

Regularly update course content to stay current with industry trends.

3. Resource Sharing:

Share resources, including facilities, laboratories, and expertise.

Establish research collaborations to address industry challenges.

4. Continuous Professional Development:

Conduct joint faculty development programs and workshops.

Ensure that academic staff is up-to-date with the latest industry practices.

5. Program Evaluation and Feedback:

Develop a robust system for evaluating the effectiveness of WIL programs.

Collect feedback from students, staff, and industry partners for continuous improvement.

6. Government Advocacy:

Collaborate to advocate for policies that support and incentivize WIL programs.

Seek government funding for infrastructure, research, and program implementation.

7. Recognition and Rewards:

Establish an awards system to recognize institutions, staff, and students for WIL excellence.

Encourage industry partners to acknowledge the contributions of academic institutions.

8. Scaling the Model:

Share the success stories and outcomes of the collaborative WIL model.

Encourage other universities and industries to adopt similar initiatives.

The synergy created by this collaboration can set a new standard for education and workforce development in India.

4.9 Collaborative UIG WIL Model derived

Phase 1: Foundation Building (1st Year) - "Discover & Engage"

Objective: Lay the groundwork for WIL by building industry awareness and enhancing aptitude. In the first phase of the UIG-WIL model, aptitude assessment and industry awareness play pivotal roles in laying the groundwork for students' journey into Work Integrated Learning. Industry stakeholders can contribute by providing insights into industry expectations and trends, helping students gain a clearer understanding of the professional landscape. Universities, on the other hand, can organize workshops and short-term programs aimed at introducing students to various industry sectors, fostering curiosity and exploration. Meanwhile, students themselves play an active role in developing a foundational understanding of different fields and identifying personal interests through

self-assessment and participation in industry-related activities. The aptitude assessment process encompasses a range of tests, including arithmetic aptitude, verbal reasoning, data interpretation, and problem-solving. Additionally, EQ (Emotional Quotient) tests and psychometry tests can be incorporated to evaluate students' leadership potential, initiative, self-awareness, motivation, confidence, and communication skills. These assessments help students understand their strengths and areas for improvement and also contribute to the development of high emotional intelligence, which is crucial for success in group discussions, job interviews, and future job performances. Moreover, industry awareness is fostered through activities such as group discussions and guest lectures. These sessions provide students with various opportunities to showcase their subject knowledge, teamwork skills, confidence, and articulation abilities. Evaluation parameters for these activities typically include communication skills (verbal and non-verbal), leadership qualities, approach (action/reaction), persuasion, group dynamics, and knowledge of the subject matter. By participating in such activities, students not only enhance their understanding of industry dynamics but also develop essential soft skills required for professional success. Industry partners provide valuable insights and perspectives, guiding the development of aptitude assessments and industry awareness activities. Overall, the integration of aptitude assessment and industry awareness activities in the first phase of the UIG-WIL model sets a strong foundation for students' engagement and prepares them for the subsequent phases of skill development and practical application.

Phase 2: Skill Development (2nd Year) - "Deepen & Specialize"

Objective: Develop specialized skills and knowledge based on individual aptitude, deepen skills and explore specific domains aligned with personal interests and career goals. In the second phase of the UIG-WIL model, the focus shifts towards skill development and specialization based on individual aptitude effectively integrating components such as seminars, long-term workshops, online webinars, career suitability tests, expert career counselling, and career roadmaps via collaboration between UIG. After students have undergone aptitude tests and gained foundational industry awareness in phase 1, the next step is to assess their career suitability in the phase 2. Career suitability tests are integrated into this phase to further refine students' career paths based on their aptitudes, interests, and personal strengths. These tests evaluate various aspects of students' skills, personality traits, and preferences to identify suitable career options that align with their strengths and aspirations. By analysing factors such as leadership abilities, problem-solving skills, communication style, and emotional intelligence, career suitability tests provide valuable insights into the types of roles and industries where students are likely to excel. Industry partners, university career centres, and counselling professionals in universities can collaborate to administer these tests and provide expert guidance on interpreting the results. Industry representatives contribute by sharing insights into the specific skills and attributes valued in their respective sectors, helping students understand the expectations and demands of various career paths. By integrating career suitability tests into phase 2 of the UIG-WIL model, students gain an in depth understanding of their career preferences and strengths that will enable them to make informed decisions about their career paths. This

personalized approach to career development enhances students' readiness for the workforce and increases their chances of success in their chosen fields. Industry partners can contribute by offering specialized training modules and workshops conducted by domain experts in various emerging technology careers or domains. These sessions provide students with insights into industry-specific skills and knowledge required for career advancement. Universities play a critical role in facilitating skill development sessions and collaborating with industry experts to design specialized workshops. They can organize seminars and webinars covering a wide range of topics relevant to students' chosen career paths, allowing them to deepen their understanding of specific domains. Students, on the other hand, can actively engage in skill training sessions and specialization workshops to enhance their expertise in areas aligned with their personal interests and career goals & also participate in career suitability tests to identify suitable career paths. Moreover, another important aspect is the creation of career roadmaps depicting a comprehensive plan of action for career progression over a span of 0-5 years further guides students in their skill development journey. These roadmaps outline the necessary steps, milestones, and resources required to achieve their career objectives, empowering students to make informed decisions about their future. By integrating these components into the second phase of the UIG-WIL model, students acquire specialized skills and knowledge that are directly applicable to their chosen.

Phase 3: Practical Application (3rd Year) - "Apply & Excel"

Objective: Apply acquired knowledge in real-world settings through long-term live projects and internships gaining hands-on experience leading to placement opportunities.

In phase 3 of the UIG-WIL model, the focus shifts towards practical application and real-world experience through long-term projects and internships. Students actively engage in the learning process, gradually transitioning from foundational knowledge to specialized skills and practical application. This phase of the Work Integrated Learning (WIL) model aims to create a comprehensive and effective learning experience for students, preparing them for industry demands while fostering collaboration between academia and businesses. Phase 3 of the UIG-WIL model includes long-term experiential learning opportunities such as internships, co-op programs, job shadowing, service-learning programs, and research projects. Internships provide students with hands-on experience in a professional work environment related to their field of study. Co-op programs offer extended periods of work-integrated learning, allowing students to alternate between academic study and full-time employment. Job shadowing allows students to observe and learn from professionals, gaining insight into the responsibilities and challenges of various roles. Service-learning programs combine community service with academic coursework, enabling students to apply their knowledge and skills to real-world issues while benefiting their communities. Research projects give students the opportunity to engage in scholarly inquiry and contribute to advancing knowledge in their discipline. Through these long-term experiential learning opportunities, students can apply theoretical knowledge and practical skills in real-world settings. They gain valuable hands-on experience, develop critical thinking and problem-solving abilities, and enhance their professional competencies, preparing them for successful careers in their chosen fields. The collaborative partnership between universities, industry, and government (UIG) is crucial in facilitating and

supporting these long-term programs. Universities can coordinate and administer these programs, working closely with industry partners to identify suitable placements and projects that align with students' academic goals and career aspirations. They provide guidance and support to students throughout the program, ensuring they have the necessary resources and assistance to succeed. Industry partners contribute by offering internship and co-op opportunities, providing students with valuable hands-on experience in real-world work environments. They also serve as mentors and supervisors, guiding students through their projects and providing feedback and support to help them develop their skills and knowledge. Government agencies support by providing funding and resources to universities and industry partners, facilitating these long-term programs. They may also establish policies and initiatives to promote work-integrated learning and encourage academia-industry collaboration. In this third phase of the WIL model, UIG collaboration can lead to the creation of entrepreneurial opportunities and incubation centers for students. Industry partners can offer insights into emerging trends and market needs, identifying potential areas for innovation and entrepreneurship. Universities can provide infrastructure and resources to support student-led startups, including access to mentorship programs, funding opportunities, and collaboration spaces. Government entities can facilitate the establishment of incubation centers through policy support, funding initiatives, and regulatory frameworks that promote entrepreneurship and innovation. By working together, UIG collaboration can empower students to turn their ideas into viable businesses, fostering a culture of innovation and entrepreneurship within the academic community.

As in phase 1 of the UIG-WIL model, students are guided to create a career roadmap, in Phase 3, they receive guidance on crafting effective resumes and CVs that highlight their skills, experiences, and achievements. Once students prepare their CVs, they undergo a comprehensive review process where they receive actionable feedback to improve any areas of weakness or derailers. Furthermore, students are provided with opportunities for mock interviews, covering technical and behavioral aspects & more. They receive constructive feedback on their performance, allowing them to make note of areas for further improvement and strategize to address them. Additionally, students can have access to networking opportunities with recruitment partners, industry professionals, and alumni. These networking events enable students to expand their professional connections, learn about current industry trends and technologies, and explore potential job opportunities. They can also be given access to blogs, videos, and other learning resources that provide insights into emerging technologies, industry best practices, and career development strategies. Ultimately, students benefit from access to placement opportunities facilitated by the university's network of recruitment partners.

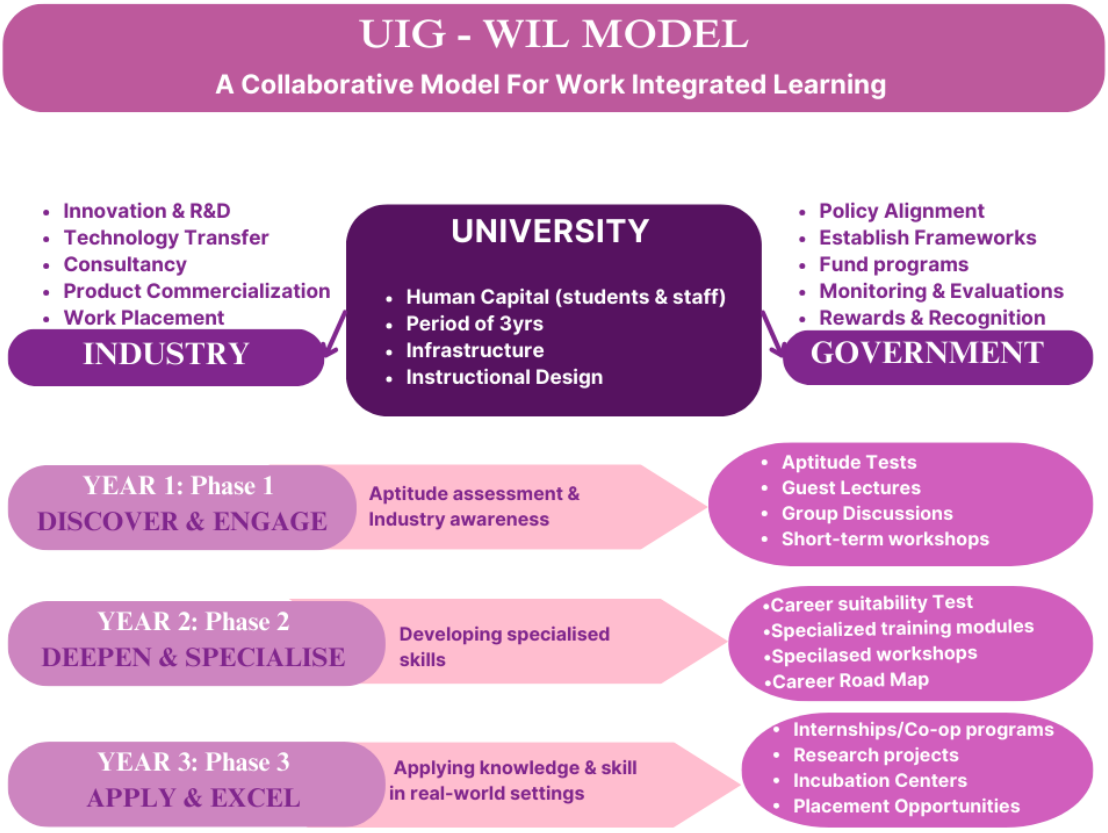
By integrating these components into the 3 phases this WIL model, students receive a comprehensive learning experience that bridges the gap between academia and industry. They will graduate with practical skills, real-world experience, and a indepth understanding of industry practices, making them highly employable and ready to contribute to the workforce effectively.

4.10 Summary

This chapter delves into the comprehensive framework of Work Integrated Learning (WIL), emphasizing the collaborative efforts of universities, industry, and government (UIG) to prepare students for the dynamic demands of the workforce. The discussion begins by highlighting the pressing need for a skilled workforce in India's rapidly growing IT industry, where industry demand outpaces the availability of experienced professionals. Recognizing this gap, the chapter proposes the UIG-WIL model, a phased approach spanning three years of a bachelor's program.

The first phase, "Discover & Engage," focuses on building industry awareness and enhancing aptitude among students. Industry partners provide insights into sectoral trends, while universities organize workshops and short-term programs to introduce students to diverse fields. Aptitude assessments and industry-related activities help students develop foundational knowledge and identify personal interests. In the second phase, "Deepen & Specialize," students undergo skill development sessions and specialization workshops tailored to their individual aptitudes. Industry stakeholders offer specialized training modules, while universities facilitate collaboration with industry experts. This phase enables students to deepen their skills and explore specific domains aligned with their career goals. The third phase, "Apply & Excel," emphasizes practical application through long-term projects and internships. Industry partners provide opportunities for students to work on live projects, while universities support the integration of theoretical knowledge with real-world application. Through hands-on experience, students gain valuable insights and develop essential competencies for professional success.

Throughout the WIL journey, collaboration between UIG stakeholders is crucial. Industry partners offer insights, training modules, and placement opportunities, while universities provide infrastructure, pedagogy, and instructional support. Government entities align policies, fund programs, and monitor outcomes to ensure the effectiveness of WIL initiatives. Furthermore, the UIG collaboration extends beyond traditional education to foster entrepreneurial opportunities and incubation centers for students. By leveraging their collective strengths, UIG stakeholders empower students to innovate, create, and succeed in the ever-evolving landscape of the workforce.



In summary, the UIG-WIL model presents a holistic approach to preparing students for the workforce, bridging the gap between academia and industry while nurturing a culture of

innovation and entrepreneurship. Through strategic collaboration and phased implementation, this model aims to revolutionize the work readiness of graduates across India.

Figure 4.10.a Diagrammatic Representation UIG- WIL Model

5 : SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

5.1 Summary

This study addresses the crucial issue of improving the work-readiness of graduates in India, especially in STEM fields, through Work Integrated Learning (WIL) and enhanced university-industry collaboration. It starts by examining WIL within the context of the Indian IT industry's need for skilled professionals. Despite the industry's rapid growth, there remains a shortage of graduates equipped with industry-ready skills, resulting in unemployability despite numerous opportunities. The research aims to bridge this gap by assessing the prevalence and effectiveness of WIL, collecting insights from university staff and students, and proposing a model to strengthen collaboration between universities and industries.

In Chapter 2, a comprehensive literature review examines various theoretical frameworks, including Human Capital Theory, Resource-Based View Theory, Stakeholder Theory, and Learning Organization Theory. These frameworks provide a conceptual foundation for understanding how WIL programs can improve graduates' work-readiness by offering practical experience and aligning with industry needs. The review highlights gaps in

existing research, particularly the need for more studies on industry-university collaboration and the impact of WIL from the perspectives of faculty and students. Chapter 3 details the research methodology, covering the research design, population, sample selection, instrumentation, data collection procedures, and data analysis methods. The chapter underscores the importance of aligning research objectives with theoretical constructs and ensuring data quality and reliability through rigorous testing and adherence to ethical standards.

Chapter 4 presents the study's findings, emphasizing the collaborative efforts of universities, industry, and government (UIG) in preparing students for the workforce. The proposed UIG-WIL model introduces a phased approach over the three years of a bachelor's program, focusing on industry awareness, skill development, and practical application through workshops, training modules, internships, and long-term projects. This model highlights the collaboration between UIG stakeholders, where industry partners offer insights and placement opportunities, universities provide educational support and infrastructure, and government entities ensure policy alignment and funding.

The research offers valuable insights into the current state of WIL practices and university-industry collaboration in India. By introducing the UIG-WIL model, the study proposes a comprehensive approach to bridging the gap between academia and industry, fostering a culture of innovation and entrepreneurship, and ultimately improving the work-readiness of graduates nationwide.

5.2 Implications

The research presented in this study has significant implications for various stakeholders working to enhance the work-readiness of graduates, particularly in the Indian IT industry. By examining the current landscape and proposing a comprehensive framework for Work Integrated Learning (WIL) and university-industry collaboration, the research offers actionable recommendations to address the skills gap and improve graduate employability. The implications derived from each chapter are as follows:

The overview highlights the critical demand for skilled IT professionals in India's rapidly expanding economy, especially in the IT sector. The existing shortage of industry-ready graduates, despite ample job opportunities, underscores the urgency for interventions like WIL to bridge the gap between academic learning and industry needs. The research identifies the lack of work-readiness among graduates as a significant issue and emphasizes the importance of university-industry collaboration to address this challenge. The implications of Chapter 1 include:

- Recognizing the importance of WIL to enhance graduate employability.
- Understanding the neccessity for industry-university collaboration to bridge the skills gap.
- Identifying the urgency for interventions to address the shortage of skilled IT professionals.

Theoretical frameworks presented provides a conceptual basis for understanding the dynamics of WIL programs and their implications for graduate work-readiness. By

integrating theories such as Resource-Based View Theory, Human Capital Theory, Stakeholder Theory and Learning Organization Theory, the research offers insights into how investments in education, leveraging organizational capabilities, and addressing stakeholder interests can enhance graduates' employability. The implications of Chapter 2 include:

- Providing a theoretical foundation for designing effective WIL programs.
- Understanding the importance of soft skills & technical skills in making graduates work-ready.
- Identifying gaps in existing research and highlighting the need for more studies on industry-university collaboration.

The methodology outlined in offers a structured approach to address the research problem concerning the enhancement of work-readiness among graduates. By operationalizing theoretical constructs and employing rigorous research design, data collection, and analysis methods, the study focusses on providing valuable insights into WIL practices and university-industry collaboration. The implications of Chapter 3 include:

- Offering a comprehensive framework for conducting research on WIL and university-industry collaboration.
- Highlighting the importance of aligning research objectives with theoretical constructs.
- Providing guidelines for addressing limitations in research design to ensure data quality and reliability.

The comprehensive framework of Work Integrated Learning (WIL) presented known as the UIG-WIL model, offers a phased approach to prepare students for the workforce. By emphasizing collaboration between universities, industry, and government (UIG), the model focusses on bridging the gap between academia and industry, nurture innovation, and foster entrepreneurship among graduates. The implications of Chapter 4 include:

- Proposing a holistic approach to enhancing graduate work-readiness through WIL.
- Highlighting the crucial role of collaboration between UIG stakeholders in implementing WIL initiatives.
- Offering insights into fostering innovation and entrepreneurship among graduates to meet the workforce requirements.

In conclusion, the research implications from each chapter highlight the crucial role of Work Integrated Learning (WIL) and university-industry collaboration in bridging the skills gap and enhancing the employability of graduates in the Indian IT sector. The study offers practical recommendations and proposes a comprehensive framework designed to transform graduate work readiness, ultimately contributing to India's economic growth and development.

5.3 Recommendations for Future Research

Several recommendations for future research emerge as follows: Geographical Expansion: The study was conducted solely in Bangalore, highlighting a geographical limitation. Future research should aim to replicate and expand upon these findings in other regions and cities across India. By conducting similar studies in diverse

geographical contexts, researchers can better understand the unique dynamics, challenges, and opportunities associated with Work Integrated Learning (WIL) implementation nationwide. Expanding the research to other major cities and regions in India would provide a more comprehensive understanding of WIL practices and university-industry collaboration across the country. Longitudinal Analysis: Future research could benefit from a longitudinal analysis to offer insights into the evolution of WIL practices, the sustainability of collaborative efforts, and the long-term impact on graduate employability. Comparative Analysis: As this study focuses on the IT industry, there is an opportunity to conduct comparative analyses of different WIL implementation models across various industries and regions. This would help identify best practices and strategies for optimizing WIL initiatives, enabling tailored approaches to program design. Including a diverse range of contexts within the study population—considering factors such as geographic location, institutional type (public vs. private), size, and socioeconomic background—can enhance the generalizability of findings and identify context-specific challenges and opportunities for WIL implementation. International Benchmarking: Conducting international comparative studies to benchmark WIL practices and outcomes against global standards would facilitate cross-country learning and knowledge sharing, further enhancing the effectiveness of WIL programs.

More Stakeholders Studies: Future research can actively engage a broader range of stakeholders, including industry partners, government agencies, employers, and alumni. By soliciting input from diverse perspectives, researchers can gain a holistic

understanding of WIL dynamics and collaboration challenges. Stakeholder engagement can also foster buy-in, collaboration etc.

Policy Analysis: There is also a scope to analyze government policies and regulations to identify barriers and enablers for scaling up WIL initiatives and fostering sustainable partnerships between universities and industries.

Technological Integration: Explore the role of technology in enhancing the effectiveness and scalability of WIL programs, leveraging digital innovations to overcome barriers and enhance learning experiences.

In summary, future recommendations for enhancing WIL practices and university-industry collaboration include incorporating longitudinal studies, ensuring representation of diverse contexts, engaging stakeholders, promoting comparative analysis, and prioritizing continuous evaluation and improvement. By addressing these recommendations, institutions can strengthen their WIL initiatives and better prepare graduates for success in the dynamic work environment. By addressing the research gaps and implementing the recommendations, stakeholders can work towards building a more inclusive, resilient, and future-ready workforce in India's dynamic IT industry and beyond.

5.4 Conclusion

In conclusion, this study has explored the complex landscape of Work Integrated Learning (WIL) within Indian higher education, particularly targeting the growing IT sector and its need for skilled graduates. It began with a comprehensive overview of WIL, emphasizing its significance in addressing the employability challenges faced by graduates in India. The study highlighted the urgent necessity for collaboration between universities and industries

to bridge the gap between theoretical education and practical workplace requirements, establishing the foundation for understanding the research problem, objectives, and the vital role of WIL in enhancing graduate work-readiness. The study then delved into the theoretical foundations of WIL, integrating Human Capital Theory, Resource-Based View Theory, Stakeholder Theory, and Learning Organization Theory. Through an extensive literature review, the study identified gaps in existing research, underscoring the need for more studies on industry-university collaboration and stakeholder perspectives. These theoretical constructs provided a conceptual framework for analyzing WIL programs and understanding the dynamics of university-industry partnerships. Next, the study detailed the methodology used to address the research problem, including the research design, population, sample selection, instrumentation, data collection procedures, and data analysis methods. The study was carefully designed to provide insights into WIL practices in Bangalore. It presented the findings and implications, showcasing the effectiveness of WIL in enhancing graduate work-readiness and the importance of university-industry collaboration. The proposed UIG-WIL model offered a phased approach to preparing students for the workforce, emphasizing practical application, skill development, and entrepreneurial opportunities. However, it also identified challenges such as lack of causality, representativeness, and reliance on quantitative data, highlighting the need for further research and improvements in study methodologies. Looking ahead, the study offers future recommendations based on identified gaps and implications. These recommendations advocate for a holistic approach to advancing WIL initiatives and university-industry collaboration in India. Universities and industry partners should invest

in capacity-building initiatives to enhance faculty expertise, infrastructure, and industry collaborations. Government support through funding and policy incentives is crucial for scaling WIL initiatives nationwide. Establishing platforms for sharing best practices, case studies, and research findings can facilitate knowledge exchange and collaboration among institutions, industries, and policymakers. Leveraging digital technologies for networking and virtual learning can broaden access to resources and expertise.

In conclusion, while this study has illuminated the promising potential of WIL in enhancing graduate employability and the UIG-WIL model in fostering university-industry collaboration, much work remains. By embracing the outlined recommendations and fostering a culture of innovation, collaboration, and continuous improvement, India can unlock the full transformative power of Work Integrated Learning, ensuring its graduates are well-equipped to thrive in the dynamic and competitive global workforce of the future.

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APPENDIX A: SURVEY COVER LETTER

This study is intended to examine the current landscape of Industry-University collaboration (Work Integrated Learning WIL) in the AICTE approved Technology Institutes of Karnataka.

Graduate hiring has been a major challenge for the corporations. In order for a Graduate to be work-ready they should possess employability skills which includes the ability to adapt to changing job markets, remain competitive, and constantly develop the skills necessary to succeed in the workplace. Thus in the Indian context, industry & academia linkages are crucial in creating employable graduates.

This study will explore the current extent of industry-university collaboration, challenges, benefits, implications of current WIL programs on students' career development and employment outcomes on universities & students. And to finally suggest a model for Work Integrated Learning across the colleges in India. Respondents of this are Faculty & students of technology institutes in Karnataka.

The findings of the study will be submitted to the AICTE Board, Education Ministry of Karnataka & Central Ministry Of Employment & Labour in-order to improve the industry-university collaboration suggest a model to be implemented across the universities/colleges in India.

Veeanta Un Milagro **Email:** veeanta@ssbm.ch

APPENDIX B: INFORMED CONSENT

I am reaching out to you as to be a part of a research study focusing on Work Integrated Learning (WIL) in higher education institutions from SSBM. The primary aim of this study is to explore the current landscape of WIL in Indian universities, with a specific focus on the perspectives of both university staff and students covering various aspects such as experiences, perceptions, and suggestions for improvement.

Your participation in this study is entirely voluntary by completing and submitting the Survey Questionnaire and your input will be invaluable in advancing our understanding of WIL practices and impact on graduate employability. Your privacy and confidentiality are of utmost importance to us & your responses will be anonymized. Your name and identifying details will not be disclosed in any reports or publications resulting from this study. Any information you provide will be treated with the strictest confidence and used solely for research purposes. All data will be stored securely in accordance with data protection regulations. You have the right to withdraw at any time without providing a reason.

By continuing with the survey, you are indicating your informed consent to participate in the study. If you have any questions please feel free to contact me veeanta7@gmail.com or reach out at +91 8296722477. Your contribution is greatly appreciated and will help inform efforts to enhance WIL practices and support the future success of students in higher education.

APPENDIX C: SURVEY QUESTIONS

1. How familiar are you with the WIL programs offered in your institute?
2. In what ways are you familiar ?
3. In your opinion, what is the current state of WIL programs in your institute?
4. What role do you play in the design and implementation of WIL programs in your institute?
5. What benefits have you observed as a result of WIL programs in your institute?
6. What challenges have you encountered in the design and implementation of WIL programs in your institute?
7. What measures are in place to ensure the quality and effectiveness of WIL programs in your institute?
8. improvements could be made to the WIL programs offered in your institute?
9. How satisfied are you with the current state of WIL programs in your institute?
10. How do you think WIL programs in your institute could better meet the needs of both students and industry partners?

11. Do you think WIL programs in your institute are providing valuable opportunities for students to gain real-world experience and prepare for their careers?
12. How important do you believe university-industry collaboration is for the success of WIL programs in your institute?
13. What benefits have you observed as a result of university-industry collaboration for WIL programs in your institute?
14. What challenges have you encountered in establishing and maintaining university-industry partnerships for WIL programs in your institute?
15. How do you think university-industry collaboration could be improved to better support WIL programs in your institute?
16. How satisfied are you with the level of university-industry collaboration for WIL programs in your institute?
17. What measures are in place to ensure the quality and effectiveness of university-industry collaboration for WIL programs in your institute?
18. How do you think university-industry collaboration could better meet the needs of both students and industry partners for WIL programs in your institute?
19. In your opinion, what impact does university-industry collaboration have on student learning outcomes for WIL programs in your institute?
20. How do you think university-industry collaboration could better support the career development of students in WIL programs in your institute?

21. Do you believe university-industry collaboration is critical to the future success of WIL programs in your institute?
22. How involved are you in the design and implementation of WIL programs in your institute?
23. What factors have influenced your level of involvement in the design and implementation of WIL programs in your institute?
24. What role do you believe university staff should play in the design and implementation of WIL programs in your institute?
25. How important do you believe university staff involvement is to the success of WIL programs in your institute?
26. What resources and support do you believe university staff need to effectively participate in the design and implementation of WIL programs in your institute?
27. How satisfied are you with the level of support and resources provided to university staff for their involvement in WIL programs in your institute?
28. How do you think university staff involvement in the design and implementation of WIL programs could be improved in your institute?
29. What challenges have you encountered in your involvement in the design and implementation of WIL programs in your institute?
30. What motivates you to be involved in the design and implementation of WIL programs in your institute?

31. How do you believe university staff involvement in the design and implementation of WIL programs affects student learning outcomes in your institute?
32. How satisfied are you with the current measures in place to ensure the quality and effectiveness of WIL programs in your institute?
33. What are the Type of collaboration
34. How many industry partners are currently involved in WIL programs in your institute?
35. What types of WIL programs and initiatives are being implemented in your institute?
36. How often does your institute collaborate with industry partners for WIL programs?
37. What is the average duration of WIL programs in your institute?
38. Does your institute have any processes in place to evaluate the effectiveness of WIL programs?
39. To what extent do you believe WIL programs in your institute are contributing to the professional development of students?
40. How satisfied are you with the level of collaboration between the university and industry partners for WIL programs in your institute?
41. Is the collaboration between your institute and industry partners formal or
42. What are the main goals and objectives of the collaboration between your institute and industry partners for WIL programs?

43. Who plays the primary role in the collaboration between your institute and industry partners for WIL programs?
44. What strategies and mechanisms are used to foster collaboration between your institute and industry partners for WIL programs?
45. What is the role of your institute in the collaboration with industry partners for WIL programs?
46. What is the role of industry partners in the collaboration with your institute for WIL programs?
47. Do you believe the collaboration between your institute and industry partners is effective in achieving the goals and objectives of WIL programs?
48. How do you think the university-industry collaboration for WIL programs has affected student employability in your institute?
49. In your opinion, how has the university-industry collaboration for WIL programs impacted the career readiness of students in your institute?
50. How do you think the university-industry collaboration for WIL programs has benefited industry partners in terms of access to talent and knowledge?
51. In your opinion, what impact has the university-industry collaboration for WIL programs had on the overall educational system in terms of job-skills alignment and student readiness for the workforce?
52. Do you think the university-industry collaboration for WIL programs has improved the overall quality of education in your institute?

53. How satisfied are you with the outcomes of university-industry collaboration for WIL programs in your institute?
54. How familiar are you with the WIL programs offered in your institute?
55. In your opinion, what is the current state of WIL programs in your institute?
56. Have you participated in any WIL programs offered in your institute?
57. What benefits have you observed as a result of participating in WIL programs in your institute?
58. How beneficial do you think participating in a WIL program will be for your future career?
59. What do you see as the main advantage of participating in a WIL program?
60. What do you see as the biggest challenge of participating in a WIL program?
61. How confident are you in your ability to successfully complete a WIL program while also maintaining your academic performance?
62. How beneficial do you think participating in a WIL program will be for your future career?
63. What do you see as the main advantage of participating in a WIL program?
64. What do you see as the biggest challenge of participating in a WIL program?
65. How confident are you in your ability to successfully complete a WIL program while also maintaining your academic performance?

66. What benefits have you observed as a result of participating in WIL programs in your institute?
67. What challenges have you encountered in participating in WIL programs in your institute?
68. How satisfied are you with the WIL programs offered in your institute?
69. What are your expectations for the WIL programs offered in your institute?
70. What factors influenced your decision to participate in WIL programs in your institute?
71. How do you think participating in WIL programs has impacted your academic performance?
72. What type of WIL model is currently being used by most universities in AICTE-approved institutes in Karnataka?
73. How often do universities in AICTE-approved institutes in Karnataka implement WIL programs?
74. Are WIL programs in AICTE-approved institutes in Karnataka mandatory or optional for students?
75. Do universities in AICTE-approved institutes in Karnataka have formal partnerships with industry partners for WIL programs?
76. How are WIL programs structured and delivered in AICTE-approved institutes in Karnataka?
77. How do universities in AICTE-approved institutes in Karnataka measure the success of their WIL programs?

78. What are the primary challenges faced by universities in implementing WIL programs?
79. What is the biggest obstacle in improving university-industry collaboration in WIL programs?
80. How does the lack of standardization in WIL programs impact work-readiness of graduates?
81. How can the current models of WIL be improved to better support university-industry collaboration and work-readiness of graduates?
82. What is the most important factor in ensuring successful university-industry collaboration in WIL programs?
83. Which of the following is NOT considered a best practice for successful university-industry collaboration in WIL programs?
84. How has involving industry partners in program design and implementation been shown to improve the work-readiness of graduates in WIL programs?
85. What role do clear expectations and guidelines play in improving the work-readiness of graduates in WIL programs?
86. In what ways have universities with strong and well-established relationships with industry partners seen an improvement in the work-readiness of graduates in WIL programs?
87. What metrics do universities currently use to evaluate the success of WIL programs?

88. How do universities determine the impact of WIL programs on graduates' work-readiness?
89. How can universities measure the effectiveness of university-industry collaboration in WIL programs?
90. What role do industry partners play in evaluating the impact of WIL programs on their organizations?
91. How can universities ensure that WIL programs have a long-term positive impact on graduates' careers?
92. What level of involvement should the government have in improving WIL programs in AICTE-approved institutes offering undergraduate courses in Engineering & Technology in Karnataka?
93. In your opinion, what is the role of industry in improving WIL programs and university-industry collaboration in these institutes?
94. How can universities better support industry in improving WIL programs and university-industry collaboration in these institutes?
95. What role should universities play in improving WIL programs and university-industry collaboration in these institutes?
96. How can government and industry better support universities in improving WIL programs and university-industry collaboration in these institutes?
97. What strategies can universities use to help students transition from WIL programs to the workforce?

98. How can universities ensure that WIL participants have the skills and knowledge needed to succeed in the workforce?
99. What role do WIL program coordinators play in helping students transition to the workforce?